REMARKS

Concerning the Specification.

Paragraph 1 of the Official Communication objects to the disclosure due to two informalities. These informalities have been corrected in the substitute specification.

Concerning the Drawings.

Paragraph 2 of the Official Communication indicates that the drawings filed on 25 May 2001 are acceptable subject to correction of informalities noted in the Notice of Draftperson's Patent Drawing Review. Included in this response is a Transmittal of Corrected Formal Drawings by which Applicants have corrected the informalities noted by the Official Draftsman.

Concerning the Claim Rejections.

At the mailing of the Official Communication, claims 6-68 were pending with the Office setting forth grounds rejecting each of these claims. The claims have been amended, mostly to reformat the claims, but in some instances, to further place the claims in condition for allowance. As a result of the amendment to the claims, claims 6-18, 22-46 and 48-73 are pending in the application with claims 19-21 and 47 having been withdrawn without prejudice and claims 69-74 having been added as new claims. The applicant submits that the amendments along with the accompanying arguments place the pending claims in condition for allowance.

Four dependent claims have been withdrawn and one independent claim (claim 16) has been converted to a dependent claim. Six dependent claims have been added. The cost that would be associated with adding six dependent claims at $9 per claim for a small entity would be $54. However, withdrawing four claims and converting claim 16

to a dependent claim should result in a $79 credit. Thus, applicant submits that no additional fees are required at this time.

Paragraphs 3-4 set forth rejections for various claims under 35 U.S.C §102(e) as being anticipated by U.S. Patent No. 6,449,601 to Friedland et al. (*Friedland*). For the reasons that follow, Applicants respectfully traverse these grounds for rejecting the claims identified in numbered paragraph 4 of the Official Communication.

With regards to claim 6, the applicant respectfully submits that the claimed invention is not fully disclosed in *Friedland* and thus, is in condition for allowance. Claim 6 has been amended to remove the "means-plus-function" language.

Auctioneer is in control. The Office will appreciate that the claimed invention enables the auctioneer to remain in control of the auctioning event. This aspect of the invention is not described, suggested or taught in *Friedland*. More specifically, the various components of the claimed system, including the clerk system, cooperate to integrate a remote bidding audience with the onsite bidding audience of a live auction, while still allowing the auctioneer to remain in control of a live auction event. The auctioneer being in control of the auction event is a key element for the integration of the remote bidders into the live auction. The auctioneer needs to have control over which bids are accepted, which bids are rejected, when the bidding is going to be closed, when the next lot is put on the block, when the lot is moved into a pre-sold state, etc. In addition, the auctioneer needs to have the freedom to work the remote and onsite audiences to push bids to their maximum level, play bidders off of each other, and generally apply the psychology of the bidding process. For the auctioneer to maintain such control, the various events (i.e., the transition from a bidding state to a sold state)

must be conducted under the control of the auctioneer rather than some external force. If such transitions are controlled by external events, the auctioneer is stripped of some level of control.

Friedland teaches a time-based transition system that greatly limits the auctioneer's control of the auction event. Throughout the *Friedland* reference, the system is described as a time-based transition system. For instance, *Friedland* states that "**at some specified time interval**, the lot transitions to either the state "pre-bid" 206 via transition 208 or the "open for bidding" state 210 . . ." Col. 6, line 19. Friedland also states that "**after another interval of time**, the lot transitions from the pre-bid state to either the open-for-bidding state 210 via transition 216 or the state "pass" . . ." Col. 6, line 29. Again, Friedland states that "a lot in the presold state will be sold to the current highest bidder unless a higher bid is received **within some time interval.**" Col. 6, line 60. Other similar references can be found at col. 6, line 55, line 56 and line 64, and col. 7 line 18.

Thus, in *Friedland*, state transitions from the pre-bid state to the sold state can occur totally autonomous of the auctioneer because such transitions are time-based. Thus, in *Friedland* the auctioneer is not in control of when the auctioning for a particular lot begins and ends.

In the present invention, the system is operated under the direction or control of the auctioneer. An item is not sold until the auctioneer makes that determination. The auctioneer is not subject to the timing constraints described in *Friedland*, and in fact, if the auctioneer so desires, he or she can delay a particular lot for as long as he or she deems is necessary, or abruptly end the auctioning. The Office will appreciate how this

control enables the auctioneer to respond to the onsite and remote audiences, play the audience members off of each other, and generally control the auction event. *Friedland* cannot provide such control to the auctioneer because it is strictly a time-based transition system. Thus, *Friedland* cannot possibly describe, suggest or teach the control aspect of the present invention because it explicitly strips the auctioneer of such control.

The Clerk System. Furthermore, with regards to claim 6, the Office will appreciate that the invention recited in claim 6 includes a clerk system and a bid system. The applicants respectfully submit that *Friendland* does not, among other things, describe, suggest or teach the use of the clerk system of the present invention.

In general, *Friedland* describes distributing live auction-related content over the Internet. The live auction-related content is generated by and exchanged between remote auction bidders and a human proxy for the remote auction bidders. The human proxy is physically present in the audience at a live auction and is nothing more than one more member of the onsite live auction audience. More specifically, the human proxy sits in the live auction audience with a laptop computer on which are composed auction status updates that are based solely upon the human proxy's personal observations of the live auction activities. The human proxy distributes the composed auction status updates from the laptop computer via the Internet to the remote auction bidders. The remote auction bidders may send auction bid instructions via the Internet only to the human proxy's laptop computer. The human proxy must then physically retrieve the remote auction bidder's bid instructions from the laptop and then must physically indicate the remote auction bidder's bid to the live auction auctioneer in the same traditional manner that onsite live auction bidders do and have historically done. As a result, the auctioneer

does not have any information indicating the identity of the remote bidders, is not able to interact with the remote bidders, and during the auction, cannot distinguish between the local bidders and remote bidders other than the fact that one of the local bidders is operating a laptop computer.

The clerk system operates to process both onsite and remote auction bids. It should be noted that the clerk system has the ability to accept and reject auction bids either automatically, under the direction of the auctioneer, or under the control of a clerk being directed by an auctioneer. This is very different from the capability of the human proxy described in *Friedland*. *Friedland* does not describe, suggest or teach the element of a clerk system that can accept or reject auction bids and the human proxy taught in the *Friedland* does not and cannot perform the functions of the applicants' clerk system.

One illustrated embodiment of this capability includes a BID INCREMENT BAR that the clerk can select to solicit bids. Independent from this function the clerk can also accept bids from the floor or from remote bidders by selecting the FLOOR BID button or the REMOTE BID button respectively. *Friedland* does not describe, suggest or teach this capability. In contrast, the human proxy described in *Friedland* decides which remote bids shall be submitted to the auctioneer and only then does the auctioneer have decision making power related to any particular remote bid.

Integration of Remote Bidders. Furthermore, the Office will appreciate that *Friedland* teaches a distribution of the auctioning status to remote bidders whereas the present invention is focused on an integration of the remote bidders into the live auction. For instance, in *Friedland*, the use of a human proxy prevents integrating the remote bidding audience and the auctioneer. The auctioneer in *Friedland* has no idea who is

providing a remote bid because the bid is entered to the floor by the human proxy raising his or her hand and bidding on behalf of the remote bidder. It is clear that in *Friedland*, no aspect of the remote bidder's personality is presented to the auctioneer and the auctioneer is unable to exploit the psychological attributes inherent in an auction atmosphere. However, the integration provided for in the present invention allows the auctioneer to work both the onsite and remote bidding audience by reading the audience and individuals, playing the individuals off of each other, and drawing larger bids for the items being auctioned. Because *Friedland* is simply a distribution system – the human proxy distributes status information to the remote bidders rather than integrating them into the audience – this level of integration is not described, suggested or taught.

In addition, *Friedland* does not describe the integration of the local bidders with the remote bidders as disclosed in the present invention. In the present invention, the clerk system instantaneously processes auction bids from onsite auction bidders and from remote auction bidders. This aspect of the present invention is illustrated in the embodiment of the "Delete Bid" function. When the clerk system enters the acceptance of a bid, the next acceptable bid increment is determined. If remote bids are pending, the clerk system can automatically accept a pending remote bid. However, if the auctioneer awards the bid to an onsite bidder rather than a remote bidder, the clerk can select the "Delete Bid" function to delete the automatically accepted bid. This is a level of integration that is not described, suggested or taught in *Friedland*, and in fact, could not be implemented in the *Friedland* system as described because *Friedland* does not describe, suggest or teach such a clerk system.

Marquee System. In claims 7-10 and 13, the element of a marquee is included. The marquee operates to further integrate the remote bidders into the live auction. The marquee is used to display the identity of the remote bidders so that the auctioneer can interact with the remote bidders. In addition, through observing the marquee, the onsite bidders can have a level of confidence of the identity of the remote bidders.

Therefore, the applicant submits that claim 6 is allowable over the cited references. Furthermore, independent claims 7-10, 12-16, and 61-63 each recite the clerk system. Thus, the applicant submits that each of these claims is in condition for allowance and are not described, suggested or taught in the cited references.

Integration of Audio. With regards to claim 8, the applicant respectfully submits that the claimed invention is not fully disclosed in *Friedland* and thus, is in condition for allowance. Claim 8 has been amended to remove the "means-plus-function" language. Claim 8 includes the element of an audio system that provides a live audio feed to the remote bidders. *Friedland* does not describe, suggest or teach this element. The only related reference in *Friedland* is that a remote bidder can listen to a live broadcast of the auction via various communication mediums. However, *Friedland* does not describe a mechanism for such a function to be integrated into the bidding system. In the claimed bidding system, this functionality is a complicated and integral component of the system.

Therefore, the applicant submits that claim 8 is allowable over the cited references. Furthermore, independent claims 9, 14, 16, 61 and 62 each recite the audio system. Thus, the applicant submits that each of these claims is in condition for allowance and are not described, suggested or taught in the cited references.

The remaining claims are dependent claims that either depend directly or indirectly from one of these independent claims. The applicant respectfully submits that the Office's rejection of the independent claims should be removed and that these claims, as well as the dependent claims are in condition for allowance.

Paragraphs 5 and 6 set forth rejections of various claims under 35 U.S.C §103(a) as being unpatentable over *Friedland.*

Paragraph 7 sets forth rejections of various claims under 35 U.S.C §103(a) as being unpatentable over *Friedland* in view of U.S. Patent Number 6,415,269 awarded to Dinwoodie (*Dinwoodie*).

Paragraph 8 sets forth rejections of various claims under 35 U.S.C §103(a) as being unpatentable over *Friedland* in view of U.S. Patent Number 6,006,201 awarded to Berent et al. (*Berent*).

Paragraph 9 sets forth rejections of various claims under 35 U.S.C §103(a) as being unpatentable over *Friedland* and Dinwoodie, and further in view of *Berent.*

Applicant respectfully submits that each of the rejections set forth in paragraphs 5-9 has been overcome in the arguments presented with regards to the rejections in paragraphs 3-4. However, the applicant addresses an additional point with regards to dependent claims 11, 18, 67 and 68.

In these claims, the element of a data mining capability is recited. Claims 11 and 18 recite the data mining capability for processing and analyzing the onsite and remote auction bid history for each item auctioned. Claims 67 and 68 recite the ability for the remote auction bidders to access the information retained by the data mining means. None of the references cited by the Office describe, suggest or teach the capability for the

remote bidders having access to such information. Thus, the applicant respectfully submits, that in addition to the previous arguments pertaining to the claims, that for at least this reason, claims 11, 18, 67 and 68 are not described in the cited art, are in condition for allowance, and requests the Office to allow these claims.

New claims 69-70 have been added to the application. These claims more clearly recite the ability for the remote auction bidders to access the data mining means to review the bidding history for particular items. Support for these claims is found on pages 50-51 of the original specification.

New claims 71-72 have been added to the application. These claims recite the ability for the bidding system to include multiple bidding engines. Thus, depending on the particular structure of the auction, different bidding engines could be utilized to drive the auctioning process. Support for these claims is found on pages 32-46 of the original specification.

New claim 73 has been added to the application. This claim recites the ability to ensure the integrity of the bidding information by limiting the streaming audio transmission.

New claim 74 has been added to the application. This claim recites the integration of the audio capabilities into the bidding device, hence the audio capabilities become an integral component of the entire system.

The new claims do not add any new subject matter nor should they require an additional search by the Office. It is respectfully requested that these claims be allowed by the Office.

Conclusion

For all these foregoing reasons, applicant respectfully requests the Office to reconsider the *Friedland*, *Dinwoodie*, and *Berent* references in light of the applicant's remarks set forth above, and to thereafter recognize the clear limitations of the disclosure and teachings of the *Friedland* reference and the patentable distinction of the claims of the present application over these references, either taken alone or in combination, and then allow all claims of the application now pending over the prior art references of record.

Thus, the applicant respectfully submits that the claims as amended, and the arguments proposed for rejection traversals place the claims in condition for allowance and respectfully request the Office to move this case to allowance.

Further, applicant respectfully requests the Office to call the applicant's attorney if there are any questions or amendments that can be handled through an examiner's amendment.

Respectfully submitted,

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Marked Up Version of Specification

REMOTE BIDDING SUPPLEMENT FOR

TRADITIONAL LIVE AUCTIONS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of ~~co-pending~~ U.S. provisional application for patent having been assigned serial number 60/207,030, and filed on May 25, 2000. This application also incorporates by reference the computer program listing appendix ("System Software") Copy 1 and Copy 2 containing the files having the dates of creation and size in bytes set forth ~~on pages 70 to 73 hereof~~in Exhibit A. ~~The remote bidding supplement for traditional live auctions of the present invention is a software based product that provides the capability for a user to instantaneously interact with and enjoy the emotion and enthusiasm of a traditional, live auction (view items for sale, view live bidding, hear the auctioneer calling bids, view the activities of the onsite participants, make bids, buy items) from a position that is physically remote from the live auction.~~

TECHNICAL FIELD

The present invention relates to the field of converging real-life events and remote access through network communications and, more particularly, to a remote bidding supplement for traditional live auctions that provides the capability for a user to instantaneously interact with and enjoy the emotion and enthusiasm of a traditional, live auction (i.e., view items for sale, view live bidding, hear the auctioneer calling bids, view the activities of the onsite participants, make bids, buy items) from a position that is physically remote from the live auction.

BACKGROUND OF THE INVENTION

Traditional-style auctions are ignoring a significant market—~~-~~the physically remote purchasers who will purchase an item without being physically present to kick the tires, feel the smoothness of a vase, hear the roar of a diesel engine or authenticate~~ing~~ an ancient item.

Currently, there are two types of remote auction systems. The first type of remote auction system has no "live" auctioneer and the entire bidding audience must be connected to the network or system. In this case, the network computer or server acts as the auctioneer, accepting bid values from the connected audience with associated time stamps based upon bid receipt by the server. Each bid is either accepted or rejected by the server; ~~and~~ the bidder (sometimes the entire audience) is notified of its acceptance or rejection. All of the items for sale in this type of auction are generally available for the entire duration of the auction and each item has a specified end time after which no bids will be accepted.

The second type of remote auction system is much like the first; however, it may or may not have a "live" auctioneer. The main difference from the first type of remote auction system is that each item for sale is not available at the same time; rather, the auction moves from item to item and depending upon the bidding activity and upon either the server's or "live" auctioneer's choice, the item is sold and the event moves on to the next item on the list.

A disadvantage of remote auctioning systems is that the participating bidders are not engrained into the excitement and energy of the live auction. From the perspective of an auction company, this can have a significant impact on the success, or the earnings, of the auction company. Many books have been written about the psychology of the auction floor and the best auctioneers are talented in the science of reading a crowd and individuals, playing them off of each other, and drawing larger bids for the items being auctioned. Thus, there is a need in the art for a technique to integrate remote auctioning systems into the real life environment of the auction floor. There is also a need in the art to allow the auctioneer to extend his or her talents beyond the auction floor and "work" the crowd of remote bidders as well as the local bidders. There is also a need in the art to

integrate remote bidders into a live auction setting in a manner that does not alienate or result in giving an advantage to either the local bidders or remote bidders.

SUMMARY OF THE INVENTION

The present invention allows for prospective auction bidders to participate both in person as well as in a remote capacity. The present invention enables an existing traditional-style auction company to utilize technology that allows an auction to be conducted in the traditional style, generating the emotion and enthusiasm in the local audience, leaving the auctioneer in ~~total~~ control of the sale, while providing the opportunity for other bidders to "attend" the auction event remotely (e.g., via the Internet), sharing the same emotion and enthusiasm as the local audience and participating in the bidding process without disadvantage, just as if those physically remote bidders were sitting in the local auction audience.

The present invention provides the catalyst for changing the live auction process by ensuring an environment in which all parties--whether in person or in a remote location--can participate as one audience without impact to the natural flow, speed and excitement of the live auction. ~~Only~~ Advantageously, ~~with~~ the present invention ~~can~~ allows remote bidders to compete--without disadvantage or a minimized disadvantage--against live floor bidders in an instantaneous bid environment while realizing the true emotion and enthusiasm of the traditional auction setting. The remote bidding system of the present invention ~~was specifically designed~~operates to enhance the live auction process rather than to alter it. The control of the auction ~~always~~ can easily remains with the live auctioneer and the auction company. The auctioneer can effectively and efficiently take bids from either the local audience or from the remote audience (e.g., via the Internet or some other local or global network). As in all traditional live auctions, the auctioneer can accept or reject any given bid from the local or remote audience. The system in effect greatly enlarges the potential pool of bidders by eliminating time, geographic or travel constraints on behalf of the bidder and quickly increases the potential reach of the auction company from a regional business to potentially a nationwide or worldwide business.

~~Crucial to~~Goals of a successful seamless integration of a remote auction audience with the local or onsite audience ~~are features of the present invention that~~include: (a) allowing the remote bidder to rapidly make a purchase decision, (b) not ~~alienate~~ alienating the bidders who took the time to actually come to the auction event, and (c) ~~while~~ instilling the confidence of all parties (onsite, remote and the auction company) in the integrity of the process. The remote bidding system of the present invention accomplishes this through the following systems of the present invention.

1) Audio/Video System - The actual emotion and enthusiasm of a traditional-style auction event is transferred to the remote bidder or participant through streaming audio ~~and video~~ technology and further enhanced through real-time video technology. The audio is transmitted from the auction site to the remote participants ~~in one (1) second or less~~with minimum delay through the network and the video is transmitted in real-time at a frame rate that supports a 56K modem connection to the network. Competing streaming live audio and video technologies of today utilize a buffering method at the encoding and/or the receiving end to achieve an acceptable level of quality for audio and video. In a traditional-style auction environment (i.e., dealer-only automobile auctions), an item may be sold every ~~20~~ 7 to 30 seconds with ~~20~~ approximately 10 to 30~~8~~ bids. Buffering at the encoding and/or the receiving end typically adds 7 or more seconds in delay to the audio and video that would place the remote participant at an extreme disadvantage. The present invention removes the buffering without sacrificing quality and with a resulting delay ~~of only~~that can be as little as one (1) second or less.

2) Bid/Clerk Systems - A Bid System controls the instantaneous interactions between the remote bidders, a Clerk System, and a Marquee System. The Clerk System controls the sequencing of items to be sold through the auction and controls the auction bidding process, both live and remote, for each item to be sold. The Marquee System displays instantaneously auction bid information for each item being sold at auction. The Bid System can include one or more bidding engines, including but not limited to the following bidding engines:

a. Cherokee Bid Engine - The Cherokee bid processing algorithm within the Bid System allows the auction to proceed at a very fast pace (in excess of ~~140~~ 120 items per hour with sometimes as many as 30 bids per item). This algorithm uses a fixed increment

predictive algorithm to present bid choices to both the ~~auction c~~Clerk System as well as the remote bidders. The Cherokee model also assigns the default high-priority to the remote bidders, but allows the auctioneer and ~~clerk~~ Clerk System to change for any specific bid.

b. Iroquois Bid Engine - The alternative Iroquois bid processing algorithm within the Bid System allows the auction to proceed at a fast pace while adding flexibility in its fixed increment predictive algorithm to accommodate a range of fixed increments depending on the actual last high bid. The Iroquois model assigns the default high-priority to the onsite/local bidders, while allowing the auctioneer and ~~clerk~~ Clerk System to change any specific bid.

c. Apache Bid Engine - The alternative Apache bid processing algorithm within the Bid System addresses many of the auction segments that do not operate with a fixed increment policy. In this model, ~~the clerk simply follows~~ the auctioneer's "asking price" chant is followed by selecting the newest asking price on the Clerk System and allows remote bidders to submit a bid for that price. ~~The Apache model allows for flexibility in choosing the default high-priority bid to be either the onsite/local bidder or the remote bidder.~~

3) Marquee System - Another ~~critical~~ aspect of the present invention is the design of the Marquee that ~~is~~ can be physically placed at the auction site. For implementations of the remote bidding system where the auction selects to include the Marquee System, t~~T~~he Marquee is used to:

a. identify incoming remote bids to the auctioneer;

b. identify incoming remote bids to the onsite/local audience to create confidence that there is a remote bidder and the identity of the remote bidder; and

c. ~~Identify~~ identify to the onsite/local audience the item being sold as well as the current high bid amount accepted (the onsite/local audience starts to bid off the Marquee).

4) Data Mining - The data mining bid log processing capability of the present invention is a unique function that provides auction companies with the ability to quickly analyze the auction event's activity to assess national and international market value of the sale items, the participation of any or all remote bidders or the incremental value-add

brought by the remote auction capability. When the data mining bid log is evaluated in conjunction with the pre-sale catalog and the condition report of the item, an ~~instantaneous~~ expeditious assessment can be made of how the features and the characteristics (e.g. damage to an automobile) of the sale item may impact the re-marketability of the item~~,~~.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic of ~~the primary elements of the remote bidding supplement~~ an exemplary environment suitable for an embodiment of the present invention.

Figure 2 is a schematic of the dataflow within the ~~remote bidding supplement of~~ exemplary environment illustrated in Figure 1.

Figure 3 is a schematic of the dataflow within the exemplary environment between the Audio/Video Capture System 102 and the Bid System 120 of the present invention.

Figure 4 is a schematic of the Audio/Video Capture System 102 of the present invention.

Figure 5 is a schematic of the Audio/Video System 100 of the present invention.

Figure 6 is an illustration of a Marquee System 140 ~~Display~~ display from the Cherokee Bid Engine of the present invention.

Figure 6A is a block diagram illustrating the interface between the Marquee System ~~d~~Display ~~d~~Device 108, the Marquee System 140 and the Bid System 120 for the transfer of display information.

Figures 7A and 7B are~~is a~~ flow diagrams illustrating details of the process flow for the Marquee System 140 in interfacing with the Bid System 120.

~~Figure 6A is a schematic of the dataflow for the Marquee System of the present invention.~~

~~Figure 7 is a schematic of the Marquee System process flow of the present invention.~~

~~Figures 7A/7B illustrate initial Marquee System logon displays, Figure 7A being generated by the Bid System of the present invention, and 7B being the display of 7A after "user name" and "password" have been entered.~~

~~Figure 7C illustrates a Marquee System display with a first DISMISS message.~~

~~Figure 7D illustrates a Marquee System display with a second DISMISS message.~~

~~Figure 7E illustrates a Marquee System display after logon is complete.~~

Figure 8A illustrates an example of a display for a Bidd~~in~~ger Device 110 where the Cherokee bid engine has been implemented.

Figure 8B is a block diagram illustrating the details of the interface between the Bidder Device 110 and the Bid System 120.

Figures 9A and 9B ~~is a~~are flow diagrams illustrating the details of operation for the Bidder Device 110.

~~8A illustrates a Bidders Display from the Cherokee Bid Engine of the present invention.~~

~~Figure 8B is a schematic of the dataflow for the Bidder System/Device of the present invention.~~

~~Figure 9 is a schematic of the Bidder System process flow of the present invention.~~

~~Figure 9A illustrates an exemplary Bidder Display.~~

~~Figure 9A illustrates a Bidder Display after a URL connection is made.~~

~~Figure 9B illustrates a Bidder Display with "user name" and "password" entered.~~

~~Figure 9C illustrates a Bidder Display with a DISMISS message box.~~

~~Figure 9D illustrates a Bidder Display after the login sequence is completed.~~

Figure 10A– illustrates an example of a Clerk System 130 display from the Cherokee Bid Engine.

Figure 10B is a block diagram illustrating the interface between the Clerk System 130 and the Bid System 120.

Figures 10C and 10D ~~is~~are flow diagrams illustrating the details of operation for the Clerk System 130.

~~Figure 10A illustrates a Clerk Display~~

~~Figure 10B is a schematic of the dataflow for the Clerk System of the present invention.~~

~~Figure 10C is a schematic of the Clerk System process flow of the present invention.~~

~~Figure 11-A/B illustrates the initial Clerk System login displays.~~

~~Figure 11C illustrates the Clerk System Display with a first DISMISS message box.~~

~~Figure 11D illustrates a Clerk System Display with a second DISMISS message box.~~

~~Figure 11E illustrates a Clerk System Display after the login process is complete.~~

Figure 12 is a schematic of the Bidding Process activation for an item to be sold at auction.

Figures 13A/13B/13C illustrate the Marquee System 140, Clerk System 130 and Bidder Device 110 ~~Displays~~ displays after entry of Next Lot = 1.~~a starting bid.~~

Figure 14 is a schematic of the entry of a starting bid value.

Figures 13D/13E/13F illustrate the Marquee System 140, Clerk System 130 and Bidder Device 110 ~~Displays~~ displays after entry of a starting bid from an onsite bidder.

Figure 15 is a schematic of the process for entry of a floor bid.

Figure 16 is a schematic of the process for entry of a remote bid.

Figures 13G/13H illustrate the examples of the Marquee System 140 and Clerk System 130 ~~D~~displays when there is a pending remote bid.

~~Figure 15 is a schematic of the process for entry of a floor bid.~~

~~Figure 16 is a schematic of the process for entry of a remote bid.~~

~~Figures 13G/13H illustrate the examples of the Marquee and Clerk Displays when there is a pending remote bid.~~

Figure 17 is a schematic of the process for acceptance of a remote bid.

Figure 13I illustrates an example of a Bidder Device 110 display~~Screen~~ when there is an accepted remote bid.

Figure 18 is a schematic of the process to override a remote bid.

Figure 19 is a schematic of the process for a sold bid.

Figures 13J/13K illustrate the Bidder Device 110 and Clerk System 130 ~~D~~displays ~~screens~~ after SOLD is selected.

Figure 20 is a schematic of the process for a remote user to request purchase information from the Cherokee Bid Engine.

Figure 21 is a schematic of the process for ~~the clerk to~~ deletinge a bid.

Figure 22 is a schematic of the process for the ~~clerk~~ auctioneer to send a message.

Figure 22A illustrates an example of a Message Screen.

Figures 23A/23B illustrates examples of Bidder Device 110 display~~Screens~~ and Figure 23C is a Clerk System 130 display~~Screen~~ from the Mohawk Bid Engine of the present invention.

Figures 24A/24B illustrate examples of a Bidder Device 110 display ~~Screen~~ and a Clerk System 130 display~~Screen~~ from the Iroquois Bid Engine of the present invention.

Figures 25A/25B/25C illustrate examples of Clerk System 130, Marquee System 140, and Bidder Device 110 d~~D~~isplays from the Apache Bid Engine of the present invention.

Figure 26 illustrates an example of a Clerk ~~Screen~~ System 130 display from the Apache Bid Engine.

Figure 27 illustrates an example of an updated Bidder Device 110 display~~Screen~~ from the Apache Bid Engine.

Figure 28 is a schematic of the Audio/Video Subs~~S~~ystem of the present invention.

Figure 29 is a schematic of the process flow of the Audio/Video Subs~~S~~ystem of the present invention.

DETAILED DESCRIPTION~~S OF THE PREFERRED EMBODIMENTS~~

~~The~~Turning now to the figures, various embodiments and features of the present invention will be described. ~~-~~One of the uniquenesses of the remote bidding supplement of the present invention is its ability to perform the remote bidder interactions in an instantaneous or near real-time environment independent of the distance between the remote bidder and the live auction. It should be understood that the terms instantaneous and near real-time are viewed from the user's perspective. Depending on the actual technology employed to implement the present invention, the speed and quality of the system can vary but, in any of the embodiments of the present invention, the goal is to provide interaction in a manner that appears to be instant from the user's perspective.

Figure 1 is a schematic of an exemplary environment suitable for an embodiment of the present invention.~~The~~ In the illustrated embodiment of the remote bidding

supplement of the present invention, ~~requires specific hardware and software products to perform these functions~~the system includes:

Three systems, each of which is preferably co-located, to perform the control functions of the auction:

- ~~———~~An A/V System 100 to receive the audio/video stream from the A/V Capture System 102 at the auction and retransmit this stream instantaneously to each of the ~~b~~Bidder ~~d~~Devices 110 of the remote bidders ~~attending~~ participating in the auction. ~~This is part of the System Software.~~
- ~~———~~A Bid System 120 to control the interaction ~~between~~ among the ~~b~~Bidding ~~d~~Devices 110 of the remote bidders, a Clerk System 130, and a Marquee System 140. ~~This is part of the System Software.~~
- ~~———~~A Catalog System 150 to maintain the pre-sales data on items to be sold (this function may alternatively be performed by either the A/V System 100 or the Bid System 120 referenced above). In the normal auction configuration, the pre-sales catalog information is kept on the Catalog System 150.

A Marquee System 140 to display current bid information onto a Marquee System D~~d~~isplay D~~d~~evice 108, from either floor or remote bidders, to the gallery/auctioneer/ringmen at the live auction.

A Clerk ~~System~~ System130 that controls the sequencing of items through the auction and controls the auction bidding process for each item to be sold.

An A/V Capture System 102 to provide the audio/video stream from the ~~camera~~ Video Source 104 and Audio Source~~sound system~~ 106 at the auction to the A/V System 100 controlling the transmission of the stream to the ~~b~~Bidder ~~d~~Devices 110 of the remote bidders. ~~Specific audio and video capture cards are required for this function. This is part of the System Software.~~

The remote bidding supplement of the present invention can performs the audio/video streaming and the remote bidder/clerk interaction as two independent functions~~:~~.

The A/V Capture System 102 ~~utilizing~~, which may consist of specific ~~the required~~ hardware cards installed in a computer system, encapsulates the audio/video stream. The A/V Capture System 102 interfaces to a Video Source 104 and an Audio Source 106. This data is transmitted to ~~a specific~~the A/V System 100 where it is re-encapsulated and broadcast to each of the ~~remote bidders~~bBiddering dDevices 1~~2~~10 ~~logged onto the system~~. This function ~~is~~ can be performed independent of the Marquee System 140, /Clerk System 130 and /Bid System 120~~s~~. In one embodiment, t~~T~~he auction bidding process ~~is~~ can be controlled by the Bid System 120 and the Clerk System 130. Data for each item to be sold is extracted from the system maintaining the pre-sales information prior to the auction start, ~~a subset is created~~ transferred to ~~on~~ the Bid System 120, and ~~is~~ broadcast to all ~~remote bidder~~ Bidder dDevices 110s and the Marquee System 140 as ~~each~~ the items ~~is~~are auctioned. A starting bid is established on the Clerk System 130 and then bids are accepted from floor or remote bidders. Status is transmitted to the Marquee System 140 and ~~all~~ the ~~bidder~~ Bidder dDevices 110 ~~logged onto the auction~~, and logs are maintained identifying ~~all~~ activity ~~performed by the clerk~~ including status of each bid made by a remote bidder.

A ~~"~~"bid engine" algorithm ~~on the Bid System 120~~ is involved in controlings the remote bidding process. ~~"~~There are four main bid engines that can be utilized. The primary functions of these engines are ~~identical~~similar; however, ~~D~~ differences ~~are~~ exist in the areas of automatic versus ~~clerk~~ controlled acceptance of a remote bid~~;~~, bid increments used by the Clerk System 130 and Bidder ~~System~~ Device 1~~2~~10s~~;~~, ability to enter starting bids ~~from entered~~ by a bBidder dDevice 110 from a remote bidder~~;~~, and display formats. These engines are identified as:

CHEROKEE

IROQUOIS

MOHAWK

APACHE

Although specific details for each of these bidding engines are provided, these details are for illustrative purposes only and the present invention is not limited to the use of any one or multiple of these engines. Rather, other bidding engines can also be employed in various embodiments of the present invention.

~~The system configuration (Figure 1) identifies the primary relationships between the elements of the remote bidding supplement of the present invention. The three primary systems work together to support the remote bidding supplement of the present invention.~~ In a practical embodiment of the present invention, the ~~Each remote bidding supplement of the present invention requires an~~ A/V System 100, the Clerk System 130, and the Marquee System 140~~that~~ are assigned to an "area" within the Bid System 120 called an environment. Bidders ~~logging onto~~ entering into an auction through a ~~b~~Bidder ~~d~~Device 1~~0~~10 are assigned to that same environment.

Figure 2 is a schematic of the dataflow within the exemplary environment illustrated in Figure 1.

~~The data flow associated with the system of Figure 1 is shown in Figure 2.~~

Aspects of the present invention can be implemented using a variety of hardware platforms, software languages and programming environments. Those skilled in the art will readily observe that implementing the present invention in various environments will naturally require the use of various technologies. However, the present invention is not limited to any particular division of hardware/software functionality, hardware components, software languages, or programming techniques. Thus, references within this description identifying design particulars are provided only for illustrative purposes and should not be construed to limit the present invention.

In addition, the exemplary environments identifying particular systems are provided for illustrative purposes. The various systems have been divided out into functional groupings. It should be understood that various functions could be performed on a single computer or on several computer systems operating in tandem. As an example, the Bid System 120, the ~~Clerk System 130, the Marquee System 140~~A/V System 100 and the Catalog System 150 could simply be various software modules running on the same computer that includes a multi-tasking operating system and the

Clerk System 130, the Marquee System 140 and the A/V Capture System 102 could also be operating on the same system at the auction site.

The various functional systems of the present invention are described more fully below. However, it should be understood that any particular embodiment of the present invention may not necessarily include each and every functional system described.

~~1.1 SOFTWARE GENERIC STRUCTURE~~

~~The following descriptions summarize the development structure utilized for the elements of the remote bidding supplement software required for the systems supporting the auction process.~~

~~1.1.1 COMPONENT DESCRIPTION~~

~~The code base for the Marquee, Clerk, and Bid Systems interface is mostly shared. Controls have been made for each main aspect of the user interface (buttons, labels, text boxes, etc). These controls deviate from the standard JAVA AWT controls because their look and functionality needed to be integrated with the rest of the AMS software presentation. The controls appearance on the screen is highly configurable in the html pages that load the applet. If one looks at the html (ringman-admin.htm, ringman-bidder.html and ringman-quack.html)more detail will be self evident. Classes were implemented per needed feature. The classes listen for events on the controls and respond appropriately by sending information to the network module, changing the state of other classes, or changing the state of other controls.~~

~~1.1.2 DATABASE~~

~~The database is currently implemented in POSTGRES.SQL. Tables and are used for logging the bidder events (proposed, accepted, rejected bids), tracking the sale inventory (item descriptions, etc), and tracking user accounts (username, password, etc). For details see the POSTGRES initialization scripts (files ending in .psql which initialize the database for the Bid System).~~

~~1.1.3 BID SYSTEM/NETWORK~~

~~Current networking is implemented in UDP, original versions were implemented in TCP, which was found to be too latent (3 second latencies in cases of certain packet transmission failure) in testing to date. The current UDP system re-implements most TCP to get around this. Details of the implementation can be found in the source file "RUDP C" (which stands for reliable UDP). The main problem with this solution to date has been the complexity required in both the Bid Device (client) and Bid System. More simple networking code may replace the RUDP implementation in future upgrades.~~

~~Parts of the Bid System use CGI (common gateway interface) programs for relaying information fro an SQL database to the user. The Bid System structure is to accept queries, then look up the appropriate information from the SQL database or its internal cache, and then to determine a response and send it to a group of bidders it has registered as being interested in that type of message. In this process it may alter the state of the database.~~

~~4.1.4 DEVELOPMENT1 OPERATING ENVIRONMENT~~

~~The Bid System was developed and operates on Redhat Linux 2.0. The project is compiled in the standard way with GNU CC for C portions and JAVAC for JAVA portions. The PSQL C library must be linked with the final Bid System executables. The Bid System should be portable to other Unix (POSIX) environments for development, testing, and operation; this may require modification, however.~~

~~1.1.5 PLATFORM~~

~~The Bid System currently runs on Redhat Linux 2.0. It was written to be portable within PQSlX and BSD sockets. It will probably require modification before it will run under other environments though. Such modification should be straight forward and trivial, but to date no porting efforts outside of Linux have been made [no compatibility with non-POSIX conformant systems or systems that do not implement BSD sockets is either expressed or implied]. The Bid System uses up resources proportional to the amount of users and size of the database it is serving.~~

~~The Bidder Device (client) software should be portable to any machine that can run a JVM, However, it has only been tested to date under Windows/Netscape on~~

Pentium II/400mhz/192MB RAM and better machines. Limited testing on machines lesser than this has revealed performance deficits possibly in the JVM implementation or some aspect of the design. Testing on other JVMS has indicated JVM portability issues which look to be resolvable but will require modification to the structure of the client applet.

1.1.6 LANGUAGES

The ringman server is implemented in C. The code was written to conform to (or at least be portable to any implementation of) the POSIX standard, except for networking sections which conform with BSD sockets. The code was written and tested in the Redhat Linux 2.0 environment with the GNU C Compiler 2.7.2 and has not been tested to date in any other environments. Compatibility with other environments including, but not limited, to previous and future versions of Linux, Windows, or any commercial UNIX system is neither expressed nor implied. UNIWC was chosen because it is the standard environment for internet applications.

The Online Ringman client is implemented in Java. Java was chosen because it is currently the only widly used internet WORA (write once run anywhere) package. Current versions of the Ringman System have only been tested under the JVM distributed with Netscape Navigator.

Future plans include moving the client application to Windows/C, which limits the user base to window users but within that user base should perform faster and more reliably and remove dependence on JVM implementations.

Portions of code that access the SQL database were written with the C version of the postgres SQL library. CGI programs run under the Apache web server. CGI was chosen because it was the simplest way to get information to a client. Since the program is written in Java, it was considered likely that the user would have access to a web browser with CGI capabilities: utilizing these capabilities was an easier, simpler, more extendable interface than adding portions to the Java code base ad-hoc.

2. AUDIO/VIDEO STREAMING

Table 1

~~MINIMUM A/V CAPTURE SYSTEM CONFIGURATION~~

~~IBM Compatible - Pentium III 450 MHz~~

~~128 MB SDRAM PC1 00 (256 MB preferred)~~

~~CD ROM~~

~~6.4 GB Hard disk drive~~

~~1.44 MB Floppy drive~~

~~3COM 905 BTX NM 10/100 N16~~

~~Standard keyboard and mouse~~

~~VGA Display controller (1 024 x 768)~~

~~Osprey 100 Video capture card~~

~~Sound Blaster PC1 128 sound card~~

~~15" Monitor~~

~~Uninterruptible Power Source Converter~~

~~Custom configured Red Hat LINUX 6.x Operating System~~

~~AMS streamer control software~~

~~Video Signal~~

~~Audio Signal~~

~~LAN connection to a high bandwidth connection to AN System~~

~~The A/V Capture System is used to (a) convert the signal from the video source to a digital stream, which is then transmitted to the AN System on a continuous basis, and (b) convert the signal from the sound source to a digital stream, which is then transmitted to the A/V System on a continuous basis.~~

~~The .unit requires a specific video capture card and a specific audio capture card in the A/V Capture system to perform these two functions. The base operating system utilized by this unit is LINUX.~~

~~2.1~~ SOFTWARE DESCRIPTION

The software description for the ~~AudioNideo~~ Audio/Video Streamer 102 is contained in the

Audio/Video Subs~~S~~ystem Overview, infra.

~~3 DISPLAY UPDATE PROCESS~~GENERAL CONFIGURATION

In the preferred embodiment, t~~T~~he Marquee System 140, the Clerk System 130, and the Bidder Device ~~System 120~~110~~s~~ displays utilize a basic ~~website~~ network technology as the basis for displaying information specific to their functions. Each system connects to a unique ~~URL~~ network address as part of the login process for the system. Once the login process is complete, the system is linked to that ~~website~~ network address. At that point, a base display is active and, in some embodiments, can be generated at specific ~~CRT~~ coordinates on the ~~screen~~display. The base display contains the background frame with dynamic display areas blank. ~~This~~ Advantageously, this ~~is done to~~ reduces the size of the data packets required when an operator/system action is taken during the normal system operation. From this point forward, small data packets are sent to specific cursor addresses on the appropriate display. For example, when a floor bid is entered on the Clerk System 130;

The Marquee System 140 ~~display~~ is updated with the specific bid amount and bidder #;

The Clerk ~~system~~ System 130 is updated with new bid increments plus a log message; and

The Bidder Device ~~System 120~~110 is updated with new bid buttons plus last bid value.

The second factor that is related to reducing the update time required for display changes is the ability to "broadcast" the same data to all systems connected to a particular ~~URL~~network address, primarily the ~~bidder~~ Bidder ~~devices~~Devices 110. Each system performing a particular function receives the same data at the same time from the Bid Server 120 perspective. The only delay in receipt of the information ~~by~~ from the Bid System 120 is the inherent delay in the distance and method of the transmission over their respective communication links.

Throughout the bid processing, movement of the ~~screen~~ cursor "selectable bar/button/etc." causes the selected item to either change color (e.g., yellow to red) or change from its idle color to no color (~~is~~i.e.~~,~~, the frame color).

The displays generated by the system can be changed either at compile time or within the ~~HTML~~ code used to output the static portions of the display. For example,

NEXT ITEM can be replaced with NEXT VEHICLE for a Clerk System 130 display associated with an automotive auction; REMOTE BID could be replaced with INTERNET for a specific internet auction; the $ in activity log messages and on bid buttons can be changed to £ for an auction in the United Kingdom. Thus, the use of ~~URL based screens~~static portions on dynamic displays advantageously allows for greater flexibility in the bidding system.

THE BID SYSTEM 120

The Bid System 120 communicates with the Bidder Devices 110 over a communications network. To provide the instantaneous look and feel of operation, this network must be able to deliver information in a timely fashion. In a preferred embodiment of the present invention, the networking is implemented in UDP or RUDP (reliable UDP) although other technologies could also be utilized. For instance, a TCP network could be implemented; however, the UDP network is significantly more efficient in that the latencies in data delivery are improved over TCP. Other networking techniques could also be employed and as technology advances, new techniques may be preferred.

In a preferred embodiment of the present invention, ~~Parts of~~ the Bid System 120 ~~may~~ uses CGI (common gateway interface) programs for relaying information from an SQL database to the user. The Bid System 120 structure is to accept queries, ~~then~~ look up the appropriate information from the SQL database or its internal cache, and ~~then to~~ determine a response and send it to a group of bidders it has registered as being interested in that type of message. In this process, it may alter the state of the database.

BIDDER DEVICE 110

The Bidder Device 110 is used by a remote bidder to view the events at the live auction via the audio/video stream transmitted to each Bidder Device 110 from the A/V System 100 and to interact with the auction through the Bid System 120, Clerk System 130 and Marquee System 140. The bidder ~~screen~~display of the Bidder Device 110 ~~displays~~presents a sequential history of the bids as ~~controlled~~defined by the Clerk System 130. During the bidding for each item, the Bidder Device 110 allows the user to enter a bid for that item which is transmitted to the Bid System 120 controlling the auction.

Recognition of the bid and whether or not it is ~~accepted by the system/clerk~~ to be transmitted to the Clerk System 130 and Marquee System 140 is ~~returned~~communicated to the ~~bidder~~Bidder Device 110 and the Bid System 120 is then ready to ~~accept~~process another bid from that remote user. The acceptance of the bid and the display returned to the user can be controlled by either the Bid System 120 or the Clerk System 130. The Marquee System 140 is independent of these actions and only receives "website updates" ~~based on their actions~~from the Bid System 120 based upon actions by the Clerk System 130 and the Bidder Devices 110.

In a preferred embodiment of the present invention, ~~T~~the display used by the Bidder Device 110 ~~is~~may be reset at three basic points in the process:

1. The base display is generated and made available to all bidders as each bidder logs onto the required ~~URL~~network address. At this point, the Bidder Device 110 ~~bidder~~ display may contains the audio/video stream from the A/V System 100 plus the base frame for the bid buttons.

2. When the clerk enters NEXT ITEM, the display is updated to contain the information for the item in a pre-set area of the display. This data area is not updated until the NEXT ITEM is selected for the bid process. If the bidder ~~logs onto~~enters into the system in the middle of the bidding for a specific item, this area ~~will~~may not contain data until the NEXT ITEM is selected.

3. The base frame (containing bid buttons and the activity log) ~~is~~may be updated each time an action is taken by the Clerk System 130, the remote bidder, or any other bidder during the bidding sequence for a particular item.

The bidder display ~~also~~may also contains one or more ~~two~~ "RELOAD" links on the display ~~at all times~~. These links allow the individual bidder to reload a particular area of the display~~:~~.

In a preferred embodiment of the present invention, a Bidder Device 110 reconnects to the A/V System 100 ~~RELOAD under the stream data - reconnects to the website URL~~ that is broadcasting the audio/video stream when RELOAD near the video portion of the Bidder Device 110 display is selected.~~; and~~

In a preferred embodiment of the present invention, a Bidder Device 110 disconnects from the Bid System 120 and returns to the logon display when RELOAD

~~under~~near the bidding portion of the Bidder Device 110 display is selected.~~frame disconnects the bidder from the system and returns to the logon display for a bidder.~~

Figure 8A illustrates an example of a display for a Bidding Device 110 where the Cherokee bid engine has been implemented. Figure 8B is a block diagram illustrating the details of the interface between the Bidder Device 110 and the Bid System 120. Figure 9 is a flow diagram illustrating the details of operation for the Bidder Device 110.

~~Figure 9A illustrates an exemplary Bidder Display.~~

~~4. BID SYSTEM AUCTION PREPARATION~~CATALOG SYSTEM 150

Prior to the start of each auction, it ~~is~~ may be necessary to ~~up~~load catalog data and user data into the Bid System 120 specific to the scheduled auction. A subset of the catalog data ~~is~~ may be utilized to generate the data that is displayed on the ~~lower left portion of the b~~Bidder Device 110 display during the auction. The user ~~file~~ data is used to identify the access each "bidder" has to the bid process (spectator, bidder with credit limit, ~~clerk~~Clerk System, ~~M~~marquee System).

~~4.1 CATALOG PROCESSING~~

The pre-sales catalog data is preferably maintained as a separate data set for each auction. ~~The maintenance of this data is not part of the process of the present invention. However, specific action must be taken prior to the sale to execute a script that retrieves the data file from the Bid System or the Catalog System and creates a"ringman sub-set" on the Bid System (./update_db.sh). This subset is then used by the bid engine to display the lower left data for each item during the bidding process.~~ Depending on the format ~~that~~ the data is stored in, various pre-processing functions may be required prior to delivering the catalog data to the Bid System 120. For instance, in one embodiment, pointers may need to be set to the beginning of a bidders log and bid log file. In addition, it may be necessary to set the bid engine to

~~Once the data is created it is necessary to execute three scripts on the Bid System for this environment:~~

~~**resetbidlogs** – sets the bidders log and bid log file pointers to thebeginning of file~~

~~**resetnohup** – system command for LINUX~~

~~restartserver - sets the bid engine to~~ start at the first item in the database (a sequence number within the database can be used to establish~~es~~ the order in which items are processed by the bid engine).

~~4.2 UPDATE DB.SH SCRIPT PROCESS~~

~~The update db.sh script creates the~~ In one embodiment, a process may run that extracts an ~~ringman~~ inventory subset from the catalog data to be stored on or accessible to ~~on~~ the Bid System 120. The ~~ringman~~ inventory subset contains ~~the "lower left"~~ data for the ~~bidders screen~~Bidder Device 110 display and ~~the~~ data for the Marquee System 140 related to each item to be auctioned. ~~The resulting table structure is in run number order.~~

The ~~script~~is process extracts the ~~required~~ inventory data from the inventory file provided to the Catalog System 150 and the ~~required~~ condition report data from the damage ~~file~~ data provided to the Catalog System 150. The extracted inventory data and damage data ~~are~~ may be subsets of the total data provided for each item. The data extracted is dependent on the format defined by the auction. ~~and subsequently must be "specifically coded" for that auction.~~

~~4.3 RESET BID LOGS SCRIPT PROCESS~~

~~The resetbidlags script resets the bidders log and bid log pointers to beginning of file and clears data currently in the file. This ensures a null file for the start of each auction. Of the script is not executed (operator controlled), prior data is not cleared and is still part of the current file.~~

~~4.4 RESTARTSERVER SCRIPT PROCESS~~

~~The restartserver script resets the internal pointers for the auction selected (via logon/passwsrd) to the start of the ringman subset such that the system automatically starts at run number 1 when the Clerk System is activated.~~

~~4.5 USER FILE UPLOAD~~

~~The Catalog System 150 may also contain a user file.~~ The user file ~~contains~~ includes access information for each user scheduled to connect to the Bid System 120 during an individual auction. Table 2 identifies an exemplary ~~the~~ format ~~of~~ for the user

~~file maintained separate from the bid server as a TAB delimited file~~. The data fields in the user file ~~are~~can include:

Field1 = user ID, this is the "logon" user name

Field2 = password

Field3 = user type; 1 = bidder, 2 = clerk, 4 = marquee

Field4 = credit limit for this auction

Field5 = field set to $0; during the auction, this field is updated on the Bid System 120 to contain the total value of items purchased by each bidder.

The user file is ~~first up~~loaded ~~to the~~for specific auction environments~~ assigned to this auction without a file extension~~. ~~The auction administrator then executes the~~The information in the user file can be formatted into ~~updateusers script, which creates the~~ internal tables the bid engine utilizes during the live auction. Table 2 illustrates and example of such an internal table.

Table 2 - User File Format

5011748	84711053	1	900000	0	user with $900,000 credit limit
656	1101265	1	999999999	0	user with unlimited credit limit
52965	3573179	1	20000	0	
5033281	182305	1	500000	0	
5050186	6810505	1	200000	0	
5032832	2382305	1	50000	0	
5032025	5202305	1	500000	0	
5050658	8560505	1	25000	0	
5025609	9065205	1	100000	0	
5042804	4082405	1	20000	0	
5004057	7504005	1	200000	0	
5032640	99983126	1	250000	0	
5045095	5905405	1	250000	0	
5011587	7851105	1	30000	0	
5029894	89583277	1	30000	0	
10006	6006	1	0	0	User with $0 credit limit =spectator
10015	150015	1	0	0	
63046	64036	1	999999999	0	
5061648	8461605	1	999999999	0	
63056	65036	1	999999999	0	
5035425	55245305	1	75000	0	
5057863	3687505	1	999999999	0	
5058742	2478505	1	999999999	0	
5059001	9500051	1	999999999	0	

Clerk	Servnet	2	0	0	Clerk access
Marquee	Servnet	4	0	0	Marquee acess
User1	Iytdirdir	1	0	0	
User2	Abcdef	1	0	0	

~~4.6 UPDATEUSERS SCRIPT PROCESS FLOW~~

~~The **updateusers** script is executed on the Bid System to import data from an external file into the internal tables used to verify logon/password combinations and determine the type of access a user has. The input file must be tab delimited and contain the data referenced in Table 2. The table constructed in the Bid System contains the same fields with no added data.~~

~~5~~ THE MARQUEE SYSTEM 140

The Marquee System 140 is the visual link between the auctioneer/ringmen, the live gallery, and the remote bidder. The ~~system~~ Marquee System 140 can employs audio and/or visual prompts to the auctioneer to indicate that a bid has been made by the remote bidder. In some embodiments, ~~T~~this system ~~is~~ can be a display-only function that is controlled by the Bid System 120 based on inputs from the ~~bidder~~ Bidder Device 110 (entry of a bid)~~, the Bid System 120 (automatic acceptance of a bid),~~ or the Clerk System 130 (operator acceptance of a bid, Next Lot, etc.). ~~The control sequence Is then reset once the current bid has been processed.~~ The ~~Marques~~ Marquee System 140 ~~is linked directly to an output port of~~ interfaces to the Bid System 120 so ~~such~~ that messages (data packets) from the Bid System 120 are automatically broadcast to the Marquee System 140 for output to the Marquee System D~~d~~isplay D~~d~~evice 108.

In the preferred embodiment, ~~T~~the Marquee System 140 operates to display:

- ~~indicates~~ the current run # (item) being sold ~~and~~;
- the current bidder ID (ID from the user file for ~~a~~an remote bidder or "floor bidder" for any bidder at the auction); and
- the amount (whether the bidder is remote or at the auction).

When a remote bid is received, the Marquee System 140 can ~~flashes~~ the display and/or provide an audible prompt ~~beeps~~ to indicate a remote bid has been made ~~plus~~ as well as ~~identifies~~ identify the remote bidder ID and the bid amount. Based on the type of

bid engine installed and the auctioneer's decision, this remote bid is either (a) accepted ~~automatically or (b) requires~~through an ~~overt~~ action by the Clerk System 130, rejected due to the auctioneer's decision to accept a bid from an onsite bidder~~to be accepted~~ or continues to be in a pending state because the auctioneer has not accepted a bid from an onsite bidder that is a higher value than the pending remote bid.~~:~~

Figure 6 illustrates an example of a Marquee Display for the Cherokee Bid Engine.

Figure 6A is a block diagram illustrating the interface between the Marquee System ~~d~~Display Device~~device~~ 108, the Marquee System 140 and the Bid System 120 for the transfer of display information. ~~identifies the configuration requirements for the Marquee System (see also Table 3) and~~

Figures 7A and 7B are~~is a~~ flow diagrams illustrating details of the ~~depicts the~~ process flow for the Marquee ~~s~~System 140 in interfacing with the Bid System 120.

Upon starting the Marquee System 140, a boot process is performed 710. In some embodiments, the Marquee System 140 is accessed via a computer running a browser interface and entering a unique ~~URL~~network address for the Marquee System 140. Once the boot process is complete, the Bid System 120 requires a login procedure to be performed 720. Once the login process is completed, the Bid System 120 interacts with the Marquee System 140 to display various ~~screens~~items or images ~~to~~that indicate the status of the auction, entrance of bids, etc.

~~Table 3~~

~~MINIMUM MARQUEE SYSTEM CONFIGURATION~~

~~IBM Compatible - Pentium 200 MHz~~

~~32 MB RAM~~

~~CD ROM~~

~~4.8 GB Hard disk drive~~

~~1.44 MB Floppy drive~~

~~3COM 10/100 Ethernet NIC~~

~~Standard keyboard and mouse~~

~~VGA Display controller (1024 x 768)~~

~~Sound Blaster compatible sound card with speakers*~~

~~(*Compaq sound card is not compatible)~~

~~RGB (SVGA) to NTSC converter (if display accepts NTSC)~~

~~Uninterruptible Power Source/Conveter~~

~~Windows 95,98, or NT operating system~~

~~Netscape 4.05 or later~~

~~Display Device~~

~~Figures 7A/7B illustrate initial Marquee System logon displays; the first generated by the Bid System while the second shows the display after "user name" and "password" have been entered. Figure 7C illustrates a Marquee System display with first DISMISS message; the operator clicks on DISMISS to eliminate message box. Figure 7D illustrates a Marquee System display with second DISMISS message; the operator clicks on DISMISS to eliminate message box. Figure 7E illustrates a Marquee System display after login is complete, with no action taken by clerk at this point.~~

~~6 BIDDER SYSTEM~~

~~The Bid System is used by a remote bidder to view the events at the live auction via the audio/video stream transmitted to each logged on bidder. In addition, the bidder screen displays a sequential history of the bids as controlled by the Clerk System. During the bidding for each item, the Bidder Device allows the user to enter a bid for that item which is transmitted to the Bid System controlling the auction. Recognition of the bid and whether or not it is accepted by the system/clerk is returned to the bidder and the Bid System is then ready to accept another bid from that remote user. The acceptance of the bid and the display returned to the user is controlled by the Bid System and the Clerk System in different combinations based on the install option selected by an auction. The Marquee System is independent of these actions and only receives "website updates" based on their actions. The specific interactions between the Clerk and Bid Systems are defined in the Bid Engine Processes section infra.~~

~~The display used by the bidder is reset at three basic points in the process:~~

1. The base display is generated and made available to all bidders as each logs onto the required URL. At this point, the bidder display contains the audio/video stream from the A/V System plus the base frame for the bid buttons.

2. When the Clerk enters NEXT ITEM, the display is updated to contain the information for the item in a pre-set area of the display. This data area is not updated until the next item is selected for the bid process. If the bidder logs onto the system in the middle of the bidding for a specific item, this area will not contain data until the NEXT ITEM is selected.

3. The base frame (containing bid buttons and the activity log) is updated each time an action is taken by the Clerk System, this bidder, or any other bidder during the bidding sequence for a particular item.

The bidder display also contains two "RELOAD" links on the display at all times. These links allow the individual bidder the ability to reload a particular area of the display:

RELOAD under the stream data - reconnects to the website URL that is broadcasting the audio/vieo stream.

RELOAD under the bidding frame - disconnects the bidder from the system and returns to the logon display for a bidder.

Figure 8A illustrates an example of a Bidders Display from the Cherokee Bid Engine. Figure 8B identifies the configuration required for the Bidder Device and Figure 9 defines the base process flow for the bidder function.

Table 4

MINIMUM BIDDER SYSTEM CONFIGURATION

IBM Compatible – Pentium 133MHz

16 MB RAM (32 MB RAM preferred)

CD – ROM

Hard disk drive

1.44 MB Floppy drive

3COM 10/100 Ethernet NIC for high speed LAN connections or 56Kbps modem with active phone line

~~Standard keyboard and mouse~~

~~Color display (800 x 600 24 bit color compatible)~~

~~Sound Blaster compatible sound card with speakers*~~

~~*Compaq sound card is not compatible~~

~~Windows 95, 98, or NT operating system~~

~~Netscape 4.05 or later~~

~~Netscape plug-in required by AMS software~~

~~Figure 9A illustrates Bidder Display after a URL connection is made. Figure 9B illustrates a Bidder Display with "user name" and "password" entered. Figure 9C illustrates a Bidder Display with a DISMISS message box. The bidder clicks on DISMISS to delete message box and to generate base Bidder Display shown in Figure 6D. Figure 9D illustrates a Bidder Display after the login sequence is completed.~~

~~7~~ The CLERK SYSTEM 130

The Clerk System 130 is used to ~~control~~ represent the bidding activities from both the floor and remote bidders in conjunction with the controlling Bid System 120. Entries made via the Clerk System 130 result in display changes for all ~~logged ow~~active bidders and the Marquee System 140. The action resulting from a particular entry is dependent on the "bid engine" being utilized by an individual auction. ~~These engines are:~~

~~Cherokee~~

~~Iroquois~~

~~Mohawk~~

~~Apache (asking price model)~~

Figure 10A illustrates an example of a Clerk System 130 d~~D~~isplay from the Cherokee Bid Engine. ~~The configuration required for the Clerk System is shown in~~

Figure 10B is a block diagram illustrating the interface between the Clerk System 130 and the Bid System 120.

Figure 10C is a flow diagram illustrating the details of operation for the Clerk System 130.

~~and in Table 5, and the base process flow for the system is contained in Figure 11.~~

~~Table 5~~

~~MINIMUM CLERK SYSTEM CONFIGURATION~~

~~*IBM* Compatible - Pentium 358MHz~~

~~32 MB RAM~~

~~CD ROM~~

~~4.0 GB Hard disk drive~~

~~1.44 MB Floppy drive~~

~~3COM 10/100 Ethernet NIC~~

~~Standard keyboard and mouse~~

~~VGA Display controller (1024 x 768)~~

~~Sound Blaster compatible sound card with speakers*~~

~~(*Compaq sound card is not compatible)~~

~~17 inch CRT display (0.27 mm dot pitch)~~

~~Uninterruptible Power Source/Converter~~

~~Windows 95, 98, or NT operating system~~

~~Netscape 4.05 or later~~

~~Figures 11A/11B illustrate the initial Clerk System logon displays. Figure 1 11C illustrates the first DISMISS message box; the operator clicks on DISMISS to delete the message box. Figure 11D illustrates the second DISMISS message box; the operator clicks on DISMISS to delete message box. Figure 11E illustrates a Clerk System display after the login process is complete.~~

~~8~~ BID ENGINE PROCESSES

The bidding process involves the Clerk System 130, the Marquee System 140, and all bidders logged ~~onto~~ into the auction. The specific process utilized for an individual auction is based on the "Bid Engine" selected by the auction to control this process. The base operations of the Bid Engines ~~is~~ are similar~~identical~~ in how the data packets are sent to the systems and the content of the data. Differences are primarily in the area of how remote bids are requested/accepted ~~(either automatically or via a clerk entry),~~; the bid value ~~options on the value to bid~~ presented to the Bidder Devices 110 (i.e., one bid value =that is the next higher sequential value versus ~~five~~multiple bid value options)~~;~~ and the ability to "set policy, thereby changing bid increments based on the

value of the last accepted bid (i.e., increment always by a fixed value versus incrementing by $25 up to $3000, $50 up to $4000, and then by $100 increments).

The data sent to the Marquee System 140 is basically the same for each of the Bid Engines. ~~Logging~~ Log-in displays are performed in the same manner in all Bid Engines;~~,~~ the content of specific messages varies by ~~bid~~ Bid ~~engine~~Engine. Display format differences are in the bidding ~~frame~~ portion on the ~~bidder~~ Bidder ~~device~~ Device 110 display and the ~~base clerk~~ display of the Clerk System 130.

Each of the Bid Engine processes is defined in the following sections. Once the ~~Marquee System 140, the~~ Clerk System 130~~, and Bidder Devices 110 are~~ is active (logged on) and the ~~base~~ displays broadcast, the process becomes event driven based on a ~~clerk~~ Clerk System 130 or B~~b~~idder Device 110 action. ~~entry on their respective systems.~~ The process flows identify the actions taken by the Bid System 120 in response to the initiation of these events.

~~8.1~~ OPERATION OF THE CHEROKEE BID ENGINE

The following processes for the Cherokee Bid Engine are detailed in the respective figures as defined throughout this section.~~in the process flow charts below.~~ Once the ~~Marquee,~~ Clerk System 130~~, and Bidder Devices~~ has~~ve~~ been initialized, the bid engine reacts to ~~entries made by either the c~~the actions of the Clerk System 130 or the ~~bidder~~Bidder Device 110.

Initiation of first item or next item (Clerk System 130 function)

Enter starting bid (Clerk System 130 function) including +~~/~~/- $500 button use

Enter floor bid (Clerk System 130 function)

Enter/accept remote bid (Bidder Device 110/Clerk System 130 function)

Sold ~~Bid~~ bid (Clerk System 130 function)

Request purchase info (Bidder Device 110 function)

Delete ~~Bid~~ bid (Clerk System 130 function)

Message (Clerk System 130 function)

~~8.1.1 ACTIVATION OF THE BIDDING PROCESS FOR FIRST, NEXT, OR ANY ITEM~~

Figure 12 illustrates the activation of the Bidding Process for an ~~Item~~item. Figures 13A/13B/13C are examples of the Marquee System 140 display, Clerk System 130 display, and Bidder Device 110 displays following the initiation of the first ~~Item~~ item in the sequence. ~~The clerk establishes the~~ The sequence of items is based on the use of the NEXT ITEM bar 1305 on the display~~:~~.

The first item can be selected by entering 1 and then clicking on NEXT ITEM; or clicking on NEXT ITEM if no other prior activity has occurred since the system was activated (the system presets to item 1 of the ~~ringman~~ inventory subset data created from the pre-sales catalog ~~in the update dbsh process~~).

The next item is normally selected by clicking on NEXT ITEM. The next sequential entry defined in the ~~ringman~~ inventory subset is selected. Any item can be taken out of sequence by entering the ~~ringman~~ inventory subset number and then clicking on NEXT ITEM. Successive NEXT ITEM entries are then based on the last item selected.

In a preferred embodiment of the present invention, ~~T~~the NEXT ITEM entry is the ~~single~~ point ~~that~~ when the ~~"lower left"~~ data is output to the ~~bidder~~ Bidder Device 110 display and the ~~four~~ display area(s) on the Marquee System 140 is/are updated for the next item in the bidding process. These areas are usually not changed until NEXT ITEM is entered.

The sequence of items is determined from the ~~pre-sales catalog~~inventory information ~~during the update_db.sh process. This process (defined in section 4.2) creates a "ringman subset" on the Bid System prior to the start of the auction. This data subset contains the run number, lower left data (specific fields from the pre-sales catalog data defined by the auction) and the standing bid if provided. During the NEXT ITEM process, the Bid System extracts the data from the ringman subset, based on the run number, and sends the necessary data to pre defined screen locations for the Marquee, Clerk, and Bidder Devices.~~

~~Figures 13A/13B/13C illustrate Marquee/Clerk/Bidder Displays after the first item is selected.~~

~~8.1.2~~ ENTER STARTING BID

Figure 14 schematically illustrates the entry of a starting bid. The clerk initiates the bidding process for each item by entering a starting bid for that item. This typically can be accomplished by two methods:

(1) Enter a user name plus a value ~~(numeric, no $ sign)~~ in the two areas above the CHANGE BID bar. Then click on CHANGE BID. This will signal the initiateion that the bidding has begun by setting a starting value plus an entry in the activity log and setting the bid increment bars on both the ~~clerk~~ Clerk System 130 display and the ~~b~~Bidder Device 110 displays. The bid increment bars are preset for ~~$100~~ pre-defined increments for ~~this~~ the Cherokee ~~b~~Bid ~~e~~Engine.

(2) Click on the +/- $500 bars (for auction events where $500 is not the preferred value, the +/- value can easily be changed) until the desired starting value appears on one of the bid increment bars on the right side of the Clerk System 130 ~~Display~~display. Then click on the starting value bar. The system then generates the Clerk System 130 display and Bidder Device 110 ~~D~~displays as done for the CHANGE BID entry.

From this point forward until the completion of bidding for a particular item (SOLD or NEXT ITEM), the CHANGE BID function can be utilized to enter a bid from a particular user or to jump the bid more than the amount shown on the last bid increment bar on the Clerk System 130 ~~D~~display. If a user ID is not entered, the system defaults to "floor bidder." The CHANGE BID process can also be utilized to override a remote bid with an equivalent floor bid (the default setting for the Cherokee Bid Engine ~~as clicking on the bid value~~ automatically assigns the bid to ~~an~~ remote user if ~~a~~that remote user's pending bid is equal to the value identified by the selected bid increment bar~~has been made at the that price~~).

The +/- ~~$580~~ 500 bars are only active ~~for the~~before the first bid on any ~~specific~~ item has been accepted. After the initial (starting) bid is entered, these bars are inactive until SOLD or NEXT ITEM is entered on the Clerk System 130 ~~D~~display.

Figures 13D/13E/13F illustrates the ~~Marquee/Clerk/Bidder Displays~~Marquee System display 140, Clerk System 130 display and Bidder Device 110 display ~~after~~upon acceptance of a ~~the~~ starting bid.

~~8.1.3~~ ENTER FLOOR BID

Figure 15 schematically illustrates the entry of a floor bid. In a preferred embodiment of the present invention, ~~To enter a floor bid, the clerk follows~~ one of two sequences have occurred on the Clerk System 130:

(1) ~~Click on~~ The value of the floor bid on the increment bars ~~if~~ has been selected and there is no bid from a remote bidder. ~~(flashing Marquee Display).~~

(2) ~~Enter~~ The value has been entered in the data entry area near ~~space above~~ CHANGE BID and then ~~click on~~ CHANGE BID is selected.

In either case, the Marquee System 140, Clerk System 130 and Bidder Device 110 ~~Displays~~ displays are updated to reflect the accepted bid value and the increment bars are reset for the preparation for next bid to be entered. The CHANGE BID sequence is typically used if the value of the bid to be accepted exceeds the highest value on the bid increment bars or ~~the clerk enters~~ a bid prior to a value being recognized by the auctioneer is transmitted from the Clerk System 130 to the Bid System 120 and the ~~clerk~~ accepted bid value must be reset ~~the bid~~ to a lower value.

~~8.1.4 ENTER/ACCEPT/OVERRIDE REMOTE BID~~

~~8.1.4.1~~ ENTER REMOTE BID

Figure 16 schematically illustrates the entry of a remote bid in a preferred embodiment of the present invention. To enter a bid from a remote bidder, the bidder typically selects~~clicks~~ the large value button that shows the next incremental bid value. The system validates the credit limit by adding dollars spent to this bid value. If the value exceeds the pre-defined credit limit, a FUND message box is displayed on the Bidder Device 110 ~~Screen~~display. The bidder then clicks on the DISMISS area of the message box and the system resets the display such that a new bid could be entered. This FUND~~S~~ message box is regenerated each time the bidder enters a bid that would exceed ~~the allowed total~~his/her credit limit. This message is also displayed if a spectator with a ~~(~~credit limit equal to= $0~~)~~ attempts to make a bid. If the bid is within ~~the~~a credit limit as defined above, ~~the system sets the Marquee to flash and beep signifying an open remote bid has been entered. The activity logs are also updated on the clerk and bidder screens to reflect this condition.~~ the Bid System 120 updates the Clerk System 130 with the proposed remote bid and updates the activity log on the Clerk System 130 and Bidder

Device 110 displays. If a Marquee System 140 is included in the installed configuration, the Marquee System 140 will show a visual alert (i.e., flash) and may also sound an audible alert (i.e., beep) signifying a remote bid has been proposed.

If two or more remote bidders enter the same bid value at the same time, the system takes the first bid received. ~~Any~~ Oother remote bidders who have entered the same bid value have the display reset with the OUTBID message.

Figures 13G/13H illustrate Marquee System 140 and Clerk System 130 d~~D~~isplays when there is a ~~Pending~~ pending r~~R~~emote b~~B~~id.

~~8.1.4.2~~ ACCEPT REMOTE BID

Figure 17 schematically illustrates the acceptance of a remote bid in a preferred embodiment of the present invention. To accept the remote bid, ~~the clerk clicks on~~ the increment bar on the Clerk System 130 Display containing that value is selected ~~(top bar on the right)~~. An alternative method is to enter the remote user ID and the value and then ~~click on~~select CHANGE BID. For either sequence, the Marquee System 140, Clerk System 130, and Bidder Devices 110 are reset to identify the accepted bid. If a Marquee System 140 is included in the auction's configuration, ~~This will stop~~ the Marquee System Display 108 will stop flashing/beeping.

Figure 13I is an illustration of an accepted remote bid on the Bidder Device 110 display.~~Screen,~~

~~8.1.4.3~~ OVERRIDE REMOTE BID

Figure 18 schematically illustrates the override of a remote bid in a preferred embodiment of the present invention. If the same bid is received from both the floor and the remote bidder, ~~the clerk can accept~~ the remote bid can be accepted (as defined above) or ~~accept~~ the floor bid can be accepted (by entering the value and clicking on CHANGE BID~~--~~(the system defaults to "floor bidder" if no bidder ID is entered for the CHANGE BID function). The Bidder Device 110 d~~D~~isplay contains an OUTBI~~H~~D message if the floor bid was accepted. If a Marquee System 140 is included in the auctions' configuration, ~~This will stop~~ the Marquee System Display Device 108 will stop flashing/beeping.

~~8.1.5~~ SOLD BID

Figure 19 schematically illustrates the process for a sold bid in a preferred embodiment of the present invention. To sell an item to either a floor or remote bidder, ~~the clerk must first accept~~ the final bid must have been accepted as previously discussed ~~in sections 8.1.3 or 8.1.4~~. The ~~clerk then clicks on the~~ SOLD button is then selected to complete the sale for that item. The activity log and the Marquee System Display Device 108 (if the Marquee System 140 is included in the configuration) identify the value, ~~and~~ the remote bidder name or the indication of a ~~"~~"floor bidder"~~—~~all specifically relating to the sold item. ~~as the person buyer of that item.~~

If the item was sold to a remote bidder, the system updates the user tables as follows:

The ~~user file~~ SPENT column for that user is updated to reflect the sum of any of his/her prior sales ~~to this user~~ plus this sale such that subsequent credit limit checks are based on the current dollars spent by this remote user.

The table is updated to reflect the information for the item just purchased by the remote bidder (listing of each item purchased, value, and time). This data is then available to the remote user at any time during the auction by clicking on PURCHASE INFO ~~at the top of the bidder~~on the Bidder Device 110 display ~~(section 8.1.6)~~.

Figures 13J/K illustrate the ~~BidderIClerk~~ Bidder Device 110 /Clerk System 130 ~~Screens~~ displays ~~after~~when the item is SOLD.

~~8.1.6~~ PURCHASE INFORMATION (REMOTE BIDDER)

In a preferred embodiment of the present invention, Figure 20 schematically illustrates the remote bidder's process for requesting purchase information in the Cherokee Bid Engine. When a remote bidder clicks on the PURCHASE INFO button on the Bidder Device 110 ~~D~~display, the system links that bidder only to a new ~~website~~ page that contains the purchase history for that remote bidder for ~~this~~the specific auction currently being attended. An example of a portential ~~The~~ format of the ~~website~~ page is shown below. To return to the Bidder Device 110 ~~D~~display, the user clicks on BACK or the X in the upper right corner of the ~~website display~~page.

username 656

password	abcdefg	
purchase total	18400	
catalog number	**amount**	**time**
15	**6500**	**09:26**
27	**11900**	**10:12**

~~8.1.7~~ DELETE BID

Figure 21 schematically illustrates the process for deleting bids in a preferred embodiment of the present invention. ~~The clerk is able to "delete"~~ A~~a~~ bid is deleted by clicking on DELETE BID on the Clerk System 130 d~~D~~isplay. The system deletes all data for that bid from the activity logs on the Clerk System 130 display and Bidder Device 110 displays, resets the Marquee System 140 to the last accepted bid data, and resets the bid increment bars on the Clerk System 130 display and Bidder Device 110 displays based on the last accepted bid prior to the bid being deleted.

~~8.1.8~~ MESSAGE FUNCTION

The message function is used ~~by the clerk~~ to send a message to either a single remote bidder or to broadcast to all remote bidders. The message format defines the type of message to be processed. Figure 22A illustrates an example of a message screen. Figure 22~~B~~ schematically illustrates the typical message process.

~~8.2~~ OPERATION OF THE MOHAWK BID ENGINE

The following processes for the Mohawk Bid Engine are detailed in the respective figures as defined throughout this section~~detailed in the process flow charts listed below~~. Once the ~~Marquee System 140,~~ Clerk System 130~~, and Bidder Devices 110~~ ~~have~~ has been initialized, the Mohawk Bid Engine reacts to ~~entries~~ Clerk System 130 or Bidder Device 110 actions~~made by either the Clerk or the remote bidder~~. For example, in one embodiment the following operations can be performed:

Initiation of first item or next item (Clerk System 130 function)**

Enter starting bid (Clerk System 130 function) including +/- $500 button use**

Enter starting bid from Remote Bidder

Enter floor bid (Clerk System 130 function)**

Enter/accept remote bid (~~Bid~~Bidder Device 110/~~/~~Clerk System 130 function)**

Sold ~~Bid~~ bid (Clerk System 130 function)**

Request purchase info (Bidder Device 110 function)**

Delete ~~Bid~~ bid (Clerk System 130 function)**

Message (Clerk System 130 function)**

** these items function similarly to the ~~s same as~~ Cherokee Bid Engine

The Mohawk Bid Engine ~~is the same as the Cherokee Bid Engine described in the previous section with added capabilities for:~~

~~Entering a starting bid from a remote bidder~~also includes

~~F~~four ~~additional~~multiple bid value buttons.

Figures 23A/23B illustrate exemplary Bidder Device 110 displays~~Screens~~ and Figure 23C an exemplary Clerk System 130 display~~Screen~~ from the Mohawk Bid Engine.

~~8.2.1 MULTIPLE~~ADDITIONAL BID BUTTONS ON BIDDER ~~SCREEN~~DEVICE 110 DISPLAYS

The Mohawk Bid Engine has ~~five~~ multiple bid bars on the Bidder Device 110 display. In a configuration with five bid bars, the ~~T; the~~ main bar is for the next higher ~~$100~~ increment (default) from the last accepted bid while the remaining four bars are for values ~~$200/$300/$400/$500~~ two times, three times, four times and five times ~~higher than~~ the default increment~~last accepted bid~~. The remote bidder clicks on the value desired to enter a bid in the same manner as previously described for the Cherokee Bid Engine. The Bid System 120 recognizes which bar has been selected and updates the Marquee System 140, Clerk System 130, and Bidder Device 110 displays accordingly. Acceptance of the bid is handled much the same way as the Cherokee Bid Engine with the primary exceptions being as follows:~~.~~

1) If two or more remote bidders submit bids of different values, the first bid received is submitted to the auctioneer. If the other remote bid(s) is/are of higher value then the previously received pending bid, it/they are queued for presentation to the auctioneer following the auctioneer's action on the previously received pending bid.

2) If a remote bidder submits a bid of value greater than the minimum increment and the auctioneer accepts a bid from an onsite bidder of lesser value, than the remote bid remains pending until the auctioneer accepts it, accepts another bid of higher value or sells the item.

~~For this process, the Bid System must output five values to update the Bidder Device 110 display instead of a single value.~~

~~8.2.2~~ ENTRY OF A STARTING BID FROM THE BIDDER ~~SYSTEM~~DEVICE 110

To enter a starting bid from the Bidder Device 110, the bidder enters a value ~~(all numeric, no dollar sign)~~ and clicks on STARTING BID. The Clerk System 130 then (a) accepts the starting bid by entering the value ~~plus~~and selecting CHANGE BID or (b) overrides the remote starting bid by entering a different value ~~+~~plus selecting CHANGE BID. Once the bidding has been initiated for a specific item, the bidder's starting value entry bar ~~is~~ may be deactivated until NEXT ITEM is selected on the Clerk System 130. The process is the same as that used to ~~Enter~~enter, ~~Accept~~accept, or ~~Override~~ override a remote bid as previously defined for the Cherokee Bid Engine.

~~8.3~~ OPERATION OF THE IROQUOIS ~~BID E~~BID ENGINE

The following processes for the Iroquois Bid Engine, in a preferred embodiment of the present invention, are detailed in the respective figures as defined throughout this section~~are detailed in the process flow charts listed below~~. Once the ~~Marquee, Clerk, and Bidder~~ Systems 130 ~~have~~ been initialized, the bid engine reacts to the ~~entries made by either the clerk or the remote bidder~~Clerk System 130 or Bidder Device 110 actions.

Initiation of first item or next item (Clerk System 130 function)**

Enter starting bid (Clerk System 130 function) including +/- $500 button use**

Set Policy (Clerk System 130 function)

Enter starting bid from Remote Bidder**

Enter floor bid (Clerk System 130 function)**

Enter/accept remote bid (~~Bid~~Bidder Device 110/~~/~~Clerk System 130 function)

Sold Bid (Clerk System 130 function)**

Request purchase info (Bidder Device 110 function)**

Delete Bid (Clerk System 130 function)**

Message (Clerk System 130function)**

** these items function similarly ~~s same as~~to the Cherokee or Mohawk Bid Engines.

The Iroquois Bid Engine provides the following additional capabilities in addition to those of the Mohawk Bid Engine:

A specific button (REMOTE BID) must be selected to accept a remote bid~~,~~; ~~clicking on~~selecting the bid value button accepts that same value from a floor bidder; and

SET POLICY— allows the auction to identify what bid increments are to be used based on the bid value (e.g., up to $2,000, use $25 increments~~,~~; for the next $2,000, use $50 increments~~,~~; above that level, ~~w~~euse $100 increments).

This affects the process used by the Bid System 120 to redisplay the ~~clerk~~ Clerk System 130 and Bidder Device 110 ~~bidder~~bid bar values as each bid is accepted.

Figures 24A/24B are examples of a Bidder Device 110 display and a Clerk System 130 ~~D~~display from the Iroquois Bid Engine.

~~8.3.1~~ ACCEPTANCE OF A REMOTE BID

Acceptance of a remote bid is accomplished by ~~clicking on~~selecting the REMOTE BID bar ~~at the top of~~ on the Clerk System 130 ~~D~~display. The resulting process is the same as defined for the Cherokee Bid Engine for an accepted remote bid. If the ~~Clerk clerk clicks on the~~ value bar equivalent to the remote bid on the Clerk System 130 display is selected, the bid is assigned to the "~~foot~~floor". For this condition, the process is the same as the override process described for the Cherokee Bid Engine.

~~8.3.2~~ SET POLICY FUNCTION

The SET POLICY function is used to define the bid increments to be used on the bid increment bars on the Clerk System 130 and Bidder Device 110 displays for each item to be auctioned. In a preferred embodiment of the present invention, ~~T~~the Clerk System 130 cannot set starting bids or accept bids until the SET POLICY function has been completed.

The ~~clerk clicks on the~~ SET POLICY bar on the Clerk System 130 display is selected~~at the bottom left of the Display. This~~ to activates the set policy box on the Clerk

System dDisplay. ~~The Cclerk then sets A~~as many increment definitions as necessary are established by entering values in the two lines initially displayed plus ADDing as many lines as necessary to complete the definition. Once all increments are defined, the ~~Clerk clerk clicks on~~ SET POLICY is selected in the message box to activate these values/increments in the bid processing. The ~~server~~ Bid System 120 compares the value of the last accepted bid against these table values and generates the appropriate INCREMENT BID BARS for both the Clerk System 130 and Bidder Device 110 displays. This is done each time a bid is accepted from the floor or from a remote bidder. The process of updating Marquee System Device 108, Clerk System 130 and Bidder Device 110 displays is the same as the Cherokee Bid Engine with the calculations performed by the ~~sewer~~ Bid System 120 prior to the values being sent to the ~~Displays~~displays.

~~8.4~~ OPERATION OF THE APACHE BID ENGINE

The fourth Bid Engine utilized is Apache ~~(or OGAC)~~. In this Bid Engine, bids are "ASKed" for and then accepted. ~~by the clerk.~~ A number of the processes are equivalent to those previously described with minor variations. The format of the Marquee System 140 and Bidder Device 110 displays is different from those referenced in prior sections. Figures 25A/25B/25C are sample Clerk System 130, Marquee System 140, and Bidder Device 110 displays from the Apache Bid Engine.

~~8.5~~ MARQUEE DISPLAY UPDATES

~~The~~ Under the Apache Bid Engine operation, the Marquee System 140 display is updated ~~for the following actions~~ in accordance with the aforementioned bid engines as well as the following:

~~The NOW SELLING LOT NUMBER field is updated when the clerk enters NEXT LOT. The field remains the same until the NEXT LOT button is selected.~~

~~The purple bar flashes (e.g., purple/green) when a remote bidder has made a bid. The flashing continues until the clerk accepts the bid value from either a floor bidder or a remote bidder.~~

~~REMOTE BID and REMOTE BID AMOUNT are updated when a remote bid has been made. These fields are cleared when the bid value is accepted (either floor or remote).~~

HIGH BIDDER and LAST LOT SOLD are updated each time the clerk clicks on the SOLD button. The HIGH BIDDER contains either FLOOR or the remote user ID.

The processes to update the Marquee System 140 are the same as those defined for the previous Bid Engines. The difference is the specific data elements and placement on the Display that vary ~~between~~ among bid engines.

~~8.6~~ CLERK DISPLAY UPDATES

Under the Apache Bid Engine operation, the ~~The clerk function~~ Clerk System 130 is functionally the same as that defined for previous Bid Engines. The primary difference is that the ~~clerk~~ Bid System 120 ASKS for a bid ~~by clicking on~~ when one of the BID INCREMENT BARS on the Clerk System 130 display is selected ~~on the right side of the screen~~. A bid for that value—once accepted by the auctioneer—is then entered by selecting ~~is then accepted by the clerk by clicking on~~ either the FLOOR BID or REMOTE BID button ~~at the top of the~~ on the Clerk System 130 display. As with the Cherokee, Mohawk and Iroquois bidding engines, variations of instructions can allow for streamlined operations by automating bid acceptance when a higher increment is selected. Actions taken/display updates for the clerk function occur as follows:

LOT NUMBER - updated when NEXT LOT is clicked for the next sequential entry in the ~~ringman~~ inventory subset.

BIDDER - updated when a bid is accepted. ~~by the clerk.~~

SOLD AT - updated when the ~~clerk selects the~~ SOLD button is selected.

ACTIVITY MESSAGES - updated each time ~~an~~ Clerk System 130, Bidder Device 110 or Bid System 120 action is ~~taken by either the clerk or bidder~~processed.

CHANGE BID ~~allows the clerk to enter a value not shown on the BID INCREMENT BARS and to enter a starting bid~~allows for a value not shown on the Bid Increment Bars to be entered, a starting bid to be entered and a previous bid to be modified.

DELETE BID - deletes the last bid and resets to the bid prior to the last bid.

NEXT LOT - same as the NEXT ITEM function.

REMOTE BID - ~~clerk selects REMOTE BID~~ may be selected to accept a bid from a remote bidder.

FLOOR BID - ~~clerk selects FLOOR BID~~may be selected to accept a bid from the live gallery.

SOLD - ~~clerk selects SOLD~~ may be selected ~~when~~ after the last bid has been accepted and the auctioneer identifies the item as sold to that bidder. When the ~~clerk clicks the~~ SOLD button is selected, a window is displayed on the Clerk ~~Screen~~ System 130 display for the purpose of ~~clerk to~~ entering the bidder number to whom the item was sold. This data is then placed in the activity messages~~,~~ and sent to the Marquee System Display Device 108~~,~~ and the ~~bottom of the~~ Bidder Device 110 display~~Screen~~. The processes for these functions are the same as the Iroquois Bid Engine with the following differences:

The FLOOR BID button may be used to accept a bid ~~is used~~ instead of clicking on the BID INCREMENT BAR for that value.

The BID INCREMENT BARS are used to broadcast a request for a bid rather than ~~to~~ accept a floor or remote bid.

Figure 26 illustrates an example of a Clerk System 130 display ~~screen~~ from the Apache Bid Engine.

~~8.7~~ BIDDER DEVICE 110 DISPLAY UPDATES

Under the Apache Bid Engine operation, ~~U~~updates to the Bidder ~~Screen~~ Device 110 display and functions activated by the bidder include:

LOT # - updated each time NEXT LOT is selected. ~~by the clerk.~~

BIDDER/CURRENT BID - updated each time ~~the clerk accepts~~ the Bid System 120 broadcasts that either a FLOOR or REMOTE BID has been accepted.

BID HISTORY - updated each time the ~~bidder or clerk takes an action~~Bid System 120 broadcasts an action taken on a Bidder Device 110 or Clerk System 130.

BID STATUS - indicates status of the remote bid from ~~this user~~that same remote bidder~~;~~.

~~YELLOW = PENDING;~~ - bid has been selected by the bidder

~~GREEN =~~ ACCEPTED~~,~~ - bid was accepted by the ~~clerk~~auctioneer

~~RED =~~ OUTBID~~,~~ - the FLOOR or another remote bid was accepted for this value.

PREVIOUS LOT #/WINNING BIDDER/WINNING BID AMOUNT~~:~~ - updated each time the ~~clerk clicks the~~ SOLD button on the Clerk System 130 is selected.

BID VALUE - updated each time the ~~clerk~~ Bid System 120 broadcasts a new ASKS value~~for a bid~~. The bidder clicks on this button to enter a bid. The button is cleared each time the SOLD button on the Clerk System 130 is selected ~~by the clerk~~ and remains clear until the NEXT LOT first ASKing price is ~~entered by the clerk~~broadcast by the Bid System 120.

HELP - activates a new ~~web~~page with hints/FAQs for the bidder. Bidder returns to the normal ~~bid~~ Bidder Device 110 display by clicking the X in the upper right corner of that ~~web~~page.

Figure ~~26~~ 27 illustrates an example of an updated Bidder Device 110 S~~screen~~display.

All ~~ringman~~ inventory subset data for the ~~bidder~~ Bidder Device 110 display is generated at one time for ~~the display~~presentation and placed ~~to the right of~~on the Bidders Device 110 display. This area ~~is~~ may be scrollable and contains ~~limited~~ information for each lot being sold. The data is broadcast to the bidder when the logon sequence is completed.

~~9 DATA MINING~~

Upon completion of the auction, the bidders attendance log and the bid log are available for post processing from the Bid System 120 directly or through a predefined ~~URL~~network address. The data is collected during the auction by the Bid System 120 as the events take place.

The bidders attendance log ~~must~~ can be downloaded directly from the Bid System 120. The bid log ~~is~~ can be obtained by accessing the required ~~URL~~ network address for that auction. ~~A~~ In one embodiment, a script ~~is~~ can be executed ~~that~~ to extracts the data from the Bid System 120 and places it ~~on~~ at the assigned ~~website~~location.

~~9.1 SCRIPT PROCESS - BIDDERS LOG~~

~~The~~ More specifically, the Bid System 120 maintains a log of bidders who connect to each auction. The log entries are maintained in a table ~~on the System~~ with an entry being made each time a ~~bidder~~Bidder Device 110, the Celerk System 130, or the Marquee System 140 ~~are~~ is initiated through the login process. ~~The showlogins script extracts the dd~~Data can be extracted from this table and ~~places~~ placed ~~the data~~ on the ~~screen~~display. To be initiated, t~~T~~his ~~script~~ extraction process may requires a unique logon/password combination to be entered on the Bid System 120. ~~to be initiated.~~ The analysis of this data identifies the user logon ID and the period for which the user was connected to the ~~System~~remote bidding system.

~~9,2 SCRIPT PROCESS - BID LOG~~

The access to the bid log ~~is~~ can be provided via a special ~~website~~ location specifically set up to extract the data from the ~~bid server~~Bid System 120. ~~The URL for this process is~~

~~**http://onlineringman.com/cgi-bid/ringman/query.cgi?bidlog.html+dbname-auction**~~

~~where "auction" is a unique name for each auction.~~

~~When~~ In an exemplary embodiment, when the ~~website~~ location is accessed, the script initiated from the ~~web~~site performs a database query to the Bid System 120. The Bid System 120 extracts the log entries from internal tables and places them in sequential time order on the ~~website~~ display. Automated analysis provides remote bidder information, including but not limited to bids made per user ID, number of items purchased by user ID, time of sale, amount of sale, average $value of items sold to remote versus floor bidders, and total statistics for the auction. The analysis can be defined specifically for each auction from the unique data items available.

~~10~~ AUDIO/VIDEO SYSTEM

The audio/video system of the present invention ("~~AN~~ A/V Subs~~S~~ystem") is a Client/Server audio and video transport system. It provides a streaming audio and video feed from a customer site to client workstations that may be located anywhere on ~~the~~ a global ~~Internet~~network. Clients receive the A/V feeds using standard ~~WWW~~ browser

software and sound cards. The system may be used for standalone applications, or may be incorporated into interactive ~~web-enabled~~ database applications as a functional subset. The A/V Capture System 102 is used to (a) convert the signal from a video source to a digital stream, which can then be transmitted to the A/V System 100 on a continuous basis~~,~~; and (b) convert the signal from the sound source to a digital stream, which can then be transmitted to the A/V System 100 on a continuous basis. The A/V System 100 broadcasts the received feed or feeds to the clients or Bidder Devices 110 with minimal delay.

There are two overarching design elements that firmly define and delineate the unique nature of the A/V System 100: ~~-~~ ~~C~~connectionless~~,~~ and ~~Non~~non-b~~B~~uffered ~~Performance~~performance. Mass-market audio/video streaming applications are oriented towards delivery of content under the assumption that buffered delay is acceptable in order to ensure very high quality (CD-quality audio, picture-quality video) at the client end of the application. ~~-~~While appropriate for consumer and high-end business delivery (high bandwith or broadband), this approach misses a potentially large audience that will trade a degree of final output quality for a more real-time performance experience (for example, to receive the "live" look and feel of an auction). These mass-market solutions are typically connection-oriented in their network delivery techniques.

The A/V System 100 uses connectionless, non-buffered designs that, in spite of the implications of the terminology, deliver~~y~~ FM-quality (voice) audio and still video streams to remote clients while at the same time ensuring an interactive response turnaround from the client application that allows the auctioneer to communicate with remote bidders without delaying or affecting the process or flow of the auction (typical delays are ~~of~~ approximately one second or less). A bonus of this approach is that it functions quite well using the lowest common denominator of internet access transport at this time---the V.90 analog modem connection. As end-user connection technology migrates to schemes with speeds higher than 56 Kbps (asynchronous)---for instance, to ADSL or cable modem technology—the performance inherent in the A/V Subs~~S~~ystem design will already be guaranteed.

~~10.1 INNOVATIVE APPLICATION OF CURRENT A/V TECHNOLOGIES~~

The A/V Subs~~S~~ystem provides its audio, video~~,~~ and integration services by using existing transport and display services in a completely unique manner. A standard audio encoding/decoding scheme is extended to ensure the reliable transmission of an FM-quality stream. A still video standard~~—~~JPEG—is sampled and streamed to simulate a live video feed while eliminating the overhead and bandwidth requirements that typically accompany such a configuration. And the final client-side presentation is integrated into ~~standard WWW browser technology~~ the Bidder Device 110 display, removing the need for multiple or custom standalone audio/video applications on the ~~remote end of the service~~Bidder Device 110.

~~10.2 A/V SYSTEM OVERVIEW~~

When considering the development of a system that can deliver an audio and video feed from an ~~source server location~~A/V Capture System 102 to multiple ~~client~~Bidder Device 110 locations, with minimal delay, there is one critical architectural decision that must be investigated~~,~~ ~~—~~that of selecting the ~~Core~~ core ~~Network~~ network ~~Topology~~topology. This decision not only drives the final system architecture, it also determines the audience and market scope that may be addressed by the final system. The ~~C~~core ~~N~~network ~~T~~topology is, in short, the choice of a transport backbone over which captured audio and video streams will be processed and delivered to remote client applications. There are many choices for such a backbone, including:

Private Broadcast/Multicast [Terrestrial or Satellite] Networks

Proprietary [Branded] Internet Broadcast Channels and Software

Custom Standards-Based Internet Software

Of these topology choices, the first, like broadcast or cable television, would result in a system suited to content delivery on a large scale, but from a practical standpoint unaffordable ~~by small to medium businesses that wished~~ to deliver content. The second, while less restrictive than the first, typically ~~carries licensing costs, co-branding requirements, and~~ is optimized for one-way content transport. Because the A/V Subs~~S~~ystem ~~100~~ needs to interact with other interactive database and web solutions, custom development of the A/V Subs~~S~~ystem ~~100~~ using ~~Open Source,~~ Open Systems

Standards was logically ~~mandated.~~; The A/V SubsSystem ~~100~~ is designed under the assumption that the majority of remote clients being served by an installation are connecting to the Internet using V.90 (56K) modems or less. It is further assumed that, on average, a V.90 connection will receive roughly 40 Kbps of reliable bandwidth over time during a session. Using these assumptions, general design parameters may be defined for the audio and video streams that will be sent to ~~client software~~Bidder Devices 110 by the A/V System 100~~server:~~.

~~10.1.1~~ AUDIO

The audio stream must be structured such that it can maintain a voice-quality feed under conditions that may include limited bandwidth (i.e. less than 56 Mbps sustained). In order to minimize development and, hence, customer costs, the audio encoder and ~~sewer~~ server ~~must~~ can run in an Open Systems server environment, and the client application should require minimal development using off-the-shelf browser technology.

The ~~selected~~ preferred audio encoder/decoder utilizes the GSM 06.10 codec library. The streaming audio produced by this library utilizes 13.3 Kbps of bandwidth and delivers an 8 KHz voice-quality audio signal to the Bidder Device 110.~~remote bidder client machine's sound card.~~

~~10.1.2~~ VIDEO

Requirements for the video stream are the same as those outlined above for audio, with one subtle difference. While the preferred long-range architecture of the A/V SubsSystem ~~100 should not, and~~ does not, preclude the inclusion of non-lossy or full-motion video technology~~;~~, initial design requirements are such that video need not be completely full-motion. A rate of one frame per three seconds has been set as a reasonable benchmark for the current release of the A/V SubsSystem ~~100~~. It is expected, however, that with the emergence and subsequent adapation of higher bandwidth technology and devices (e.g. cable modems, DSL, etc.), the A/V Subsystem will be able to advantageously utilize the increased bandwidth and provide a video signal with a frame rate that approaches non-lossy or full motion video.

The ~~video encoder~~A/V Capture System 102 utilizes JPEG for video software, and the streamer portion of the server is designed to give priority, should it be required, to the

audio feed. The combination of the audio and video stream to any given ~~remote bidder cli~~Bidder Device~~ent~~ 110 will, under normal network conditions, fit into the 40 Kbps average ceiling estimated for V.90 connections.

The ~~A/V System 100~~ A/V Subsystem is composed of hardware and software elements configured in a client/server architecture. The A/V Subsystem ~~consists of server side of the AN~~ A/V ~~System 100 is configured to run in the Linux Operating System environment, and consists of~~ an Encoding Server~~---~~the A/V Capture System 102 (typically deployed at the site of audio/video capture) and a Master Server or Reflector—the A/V System 100 ~~(maintained at a secure high-capacity AMS Point-of-Presence)~~. The ~~Encoding Server~~A/V Capture System 102 sends an ~~single~~ audio and video stream to the A/V System 100~~Master Server~~, which in turn oversees distribution of multiple streams to the remote clients. The client side or Bidder Device 110 ~~of the A/V System 100~~ is typically configured to run with standard commercial ~~WWW/HTML~~ browsers. In one embodiment,~~; currently~~ the client ~~is~~ can be deployed specifically for the Netscape™ 4.X browser release, but the architecture does not preclude compiling for Microsoft Internet Explorer™ or other browsers.

Figures 28 and 29 present general views of the layout and operation of the A/V SubsSystem.

~~10.3~~ —ENCODING SERVER - FUNCTIONAL

The A/V Capture System ~~100~~ 102~~Encoding Server runs under Linux and uses the Osprey 100 video capture card (with the BTTV driver for Linux) for video capture. A Linux compatible 16 bit sound card (e.g. SB16, SB32, ESS, etc) is required for audio capture. The encoder~~ opens up two connections to the ~~Master Sewer Server~~A/V System 100~~--~~one for a video stream and one for an audio stream. The video is compressed into a full JPEG image and is sent at a steady rate, determined at server connection. The audio is compressed using ~~GSM 06.10~~standard encoding/decoding algorithms and is sent at a steady rate, also determined at ~~server~~the A/V System 100 connection.

The A/V Capture System 102 at initiation of the streamer can accept several parameters that invoke the following features:

Dual Modems – for dual modem configurations, it is desirable to select one modem for audio and the other for video. Doing so will require proper setup of the routing tables.

Save To A File – The A/V Capture System 102 will encode the captured audio and video; however, rather than send it to the A/V System 100, the resulting captured audio and video will be saved to a file.

Play From A File – The A/V Capture System 102 will use encoded source material and stream it to the A/V System 100 rather than receive the input from the Video Source 104.

Frequency – This parameter will change the frequency in which the A/V Capture System 102 captures or encodes a frame.

Quality – This parameter will change the quality of the encoded video.

~~The encoder uses a configuration file "ams-streamer.conf" which is in the format of:~~

~~ID server-port audio-interface video-interface server-address password~~

~~Only the first line of the file will be read; all other lines are ignored.~~

~~Valid configurations include:~~

~~123 9781 - - 192.168.1.1 password~~

~~456 9782 ppp0 ppp1 192.1 68.1.1 pw~~

~~Note that the IP address used for the server-address field above is a dummy example only.~~

~~The *123* configuration uses " " (meaning default interface) for both audio and video interfaces; the 456 configuration uses ppp0 for audio and ppp1 for video. For dual modem configurations (possible with multilink PPP configurations, but not recommended by AMS), it is desirable to select one modem to send audio and the other to send video. Doing so will require proper setup of the routing tables and root privileges (to allow selection of which interface to send the packets through), and can be done by making the encoder program setuid root.~~

~~The encoder is invoked by running streamer from the Linux command line. [Note – In A/V Transport versions to date there are two other programs – streamer-save and streamer-play – both of which are currently for testing purposes only.]~~

~~'The streamer program accepts/has the following command-line options:~~

~~**streamer -f frequency -q quality -h**~~

~~The **-f frequency** option specifies the frequency of video capture in tenths of a second, with the default set at 30. The **-q quality** option specifies the JPEG compression quality as a relative percentage between 1 and 100, where lower numbers equate to lower image quality, with the default set at 15. The **-h** option will display command-line help.~~

~~10.4 ENCODING SERVER - BUILD ENVIRONMENT~~

~~The encoder runs under Linux and requires GNU make and GNU gcc. It uses the Independent JPEG Group's (IJG) JPEG sofaware (for video), the GSM 06.10 library by Jutta Degener and Carsten Bormann of Technische Universitaet Berlin (for audio), and the MD5 message digest algorithm by RSA Data Securities, Inc. (for authentication).~~

~~The Build Environment specifics are:~~

~~Operating System: Red Hat Linux 5.2 (or higher)~~

~~Linux Kernel: 2.2.X (or higher)~~

~~Kernel Library: libc.so.6 (or higher)~~

~~Compiler: GNU C 2.7.2 (or higher)~~

~~10.5 ENCODING SERVER - HARDWARE ENVIRONMENT~~

~~The Encoding Server requires the following hardware components:~~

~~IBM-compatible PC, Intel Pentium 450 MHz (or faster) CPU~~

~~256 MB RAM (minimum)~~

~~1.0 GB Hard Disk (minimum)~~

~~V.90 (56K) internal modem~~

~~10/100 Ethernet Network Interface Card~~

~~Keyboard and Mouse~~

~~Osprey-100 Videa Capture Card~~

~~15" CRT Display *(.27* mm dot pitch)~~

~~Sound card (SB16-compatible) with speakers and microphone input~~

~~CD-ROM drive~~

~~3.5" 1.44 MB floppy drive~~

~~Video Capture Device (Sensomatic camera preferred)~~

~~Audio Line Mixer (Radio Shack recommended)~~

~~A routed Internet connection using a high-capacity circuit technology is suggested. (Single-link analog PPP connectivity via the internal modem is possible, but not supported by AMS. Multilink analog PPP connectivity via dualinternal modems is also possible, but again is not actively supported.) The Internet connection may use any of several available connection technologies, including but not limited to (a) dialup ISDN (128K dual-channel), (b) dedicated ISDN (128K), (c) xDSL, (d) Frame Relay, or (e) dedicated private line.~~

~~10.6 MASTER SERVER~~A/V SYSTEM 100 - FUNCTIONAL

The ~~Master Server~~A/V System 100 accepts streams from ~~Encoding Server~~A/V Capture System 102 and sends them to Bidder Devices 110~~clients~~. It supports multiple streams. Each stream ~~is~~ may be protected by a password to prevent unauthorized encoders from using the server. In a preferred embodiment of the present invention, ~~With the current implementation,~~ a stream is ready to send to clients when both the audio and video channels have been established. Ideally (given perfect network conditions), packets are sent using the audio packets as the pulse (~200ms) and followed by a set video frame size. Audio and video are delivered to clients in a single channel to ensure more priority for the audio and to lessen the amount of buffering required for the audio. In a preferred embodiment, ~~Audio~~ audio is not considered critical (~~lost~~ lost packets allowed) on both encoding and the client end. This is by design as the entire A/V Subs~~S~~ystem ~~100~~ is constructed for integration with interactive database applications (live auctions are a primary example). Under network congestion or error conditions, the integrated application must receive higher network priority.

In a preferred embodiment of the present invention, ~~V~~video on the encoding end is not considered critical. However, video on the client end is considered critical (any missing parts will be re-requested until all parts are available; note that images that seem to be incomplete are due to the encoder, not the client). Remote bidder clients will receive the most recent complete frame available on the server at the time of request. Currently, connections to streams do not have access controls to limit which connection can view which stream.

The server uses a configuration file **ams-serverxohf,** which is in the format of:

ID server-port stream-port password

Multiple entries may be specified to allow multiple streams (the maximum number of streams allowed is set up at program compile time). The ID, server-port, and stream-port must be unique. [Note: the current implementation uses port 9780 for all server ports, regardless of the number specified.]

The server is invoked by running **server** at the Linux command line. The **server** process should be left running while the Master Server machine is active. At this time the server program has not been configured to run as a daemon process under the control of inetd. The server program should be run by a non-root user. It is suggested that the screen program be used to start the server:

$ screen ./sever

This will allow the program process to be detached from the console or terminal session using the key sequence **Ctrl-A+D.** The session may be reattached at a later time with the command:

$ screen -r {pid}

Where {pid) is the process ID of the server program.

if the server code was compiled with "TESTING" defined, the command-line "-t clients" is available for stress testing with "clients" amount of fake clients.

10.6 MASTER SERVER - BUILD ENVIRONMENT

The Master Server requires GNU make and GNU gcc. It uses the MD5 message digest algorithm by RSA Data Securities, Inc. for authentication.

The Build Environment specifics are:

Operating System:	Red Hat Linux 5.2 (or higher)
Linux Kernel:	2.2.X (or higher)
Kernel Library:	libc.ss.6 (or higher)
Compiler:	GNU C 2.7.2 (or higher)

10.7 MASTER SERVER - HARDWARE ENVIRONMENT

The Master Server requires the following hardware components:

IBM compatible PC, "Server" Class

~~Dual Intel Pentium 11450 MHz (or faster) CPUs~~

~~256 MB RAM (minimum)~~

~~4.0 GB Hard Disk (minimum)~~

~~100 Mbps Fast Ethernet Network Interface Card~~

~~Keyboard and Mouse~~

~~15" CRT Display (.27 mm dot pitch)~~

~~CD ROM drive~~

~~3.5" 1.44 MS floppy drive~~

~~10.8~~ CLIENT - FUNCTIONAL

The preferred Bidder Device 100 client is a Netscape plug-in using Win32 code. It opens up a connection to the ~~sewer server~~A/V System 100 and decodes the packets it receives into audio and video. The audio is played through the default ~~Windows~~ Operating System audio playback device. The video is displayed in the ~~Netscape~~ browser~~. page.~~ The client will try to maintain a constant three audio ~~buffers~~ frames for playback (~~~70Oms~~700ms). If it has fewer, it will play the audio a bit slower; if it has more, it will ~~cut off the audio if there are too many~~disconnect from the A/V System 100, or ~~if~~ it will play the audio a bit faster to catch up.

~~The client must start with "np" and end with ".dll" and reside in Netscape's plug-ins directory.~~

~~The client may be invoked from an HTML page by using the following:~~

~~<embed src=192.168.1.1:9873 width=256 height=192 type="application/x-mis-ams"></embed>~~

~~The src parameter should point to the server's IP address and the streamer's port.~~

~~10.9 CLIENT - BUILD ENVIRONMENT~~

~~The client runs under Netscape and Windows 9x/NT. It requires MS Visual C++ (load up the amsclient project and compile the NS project; the resulting npams.dll file from the NS project is the plugin to use). It uses the Independent JPEG Group's (IJG) JPEG software (for video), the GSM 06.10 library by Jutta Degener and Carsten~~

~~Bormann of Technische Universitaet Berlin (for audio), the MD5 message digest algorithm by RSA Data Securities, Inc. (for authentication), and Netscapes plug-in SDK.~~

~~The Build Environment specifies are:~~

~~Operating System: Windows 95/98/NT~~

~~Compiler:Microsoft Visual C++ - current release~~

~~10.10 COMPONENT LICENSE INFORMATION~~

~~GSM 06.1 0 LIBRARY:~~

~~Copyright 1992,1993,1994 by Jutta Degener and Carsten Bormann, Technische Universitaet Berlin~~

~~JPEG LIBRARY:~~

~~This software is copyright (C) 1991 -1 998, Thomas G. Lane.~~

~~MD5 LIBRARY:~~

~~Copyright (6) 1991 -2, RSA Data Security, Inc. Created 1991. All rights reserved.~~

~~It is believed that the following unique attributes distinguish the A/V System from other currently available Internet-based audio/video transmission systems.~~

~~10.11 ENGINEERING DESIGN~~

~~10.11.1 SPECIFIC VS. MASS MARKET DESIGN~~

Other A/V products are designed for very specific market applications, and the underlying architecture tends to be reflected in the final design, customer implementation costs, and (often) branding requirements. These design categories include ~~One~~one-to-one ~~Transport~~transport, ~~Group~~ group ~~Collaboration~~ collaboration ~~Transport~~transport, and ~~One~~one-to-~~Many~~ many ~~T~~transport. Products like IP-Phone packages and online meeting tools exemplify the first two categories. These products tend ~~to be low-cost (often due to branding/advertising requirements), but are not~~to not be designed to scale well beyond point-to-point or small group usage. Most are, as well, audio-centric in their design. The third category is oriented towards broadcast or multicast to larger audience size, but products to date either tend ~~of~~ to focus on delivery of pre–recorded content or, where

live delivery is concerned, involve extremely high-cost server and bandwidth configurations. ~~that keep the tools out of reach for small to medium sized businesses. (Co-branding is sometimes used as a way to alleviate costs, but many firms that would like to use audio/video transport solutions are reluctant to enter co-branding or advertising oriented agreements.)~~

~~The A/V System 100, while scalable for very large installations, was designed with the small to medium size market in mind. The price-performance profile for the System is, then, a unique point of differentiation in the marketplace.~~

~~10.11.2 CODEC AND TRANSPORT SELECTION~~

If an audio/video system is engineered to deliver audio at CD-quality levels, and video at good approximations of broadcast-quality (or at least moderate video-conferencing quality), it will be engineered with codec and transport mechanisms that are "highly reliable" and ~~that~~ tend to use some form of carefully designed buffering for incoming streams to the client application. The term "highly reliable",~~"~~ however, should not be taken to infer that a design ~~lasing~~ using "less reliable" delivery mechanisms or "lossy" codec schemes is, as a result, a less robust design. The ~~AV~~ A/V SubsSystem ~~100~~ was initially designed to deliver the "look and feel" of a live ~~auto~~ auction to ~~an online Internet-based~~ remote audience, and the codec and transport design decisions reflect the unique requirements of this market.

In a live ~~auto~~-auction, there is an inherent degree of "noise" as a part of the process itself; product is rolled through the auction ~~lane~~ at a rate no slower than one ~~vehicle~~ item every three minutes, and bidders have had time prior to the actual sale to investigate and inspect the ~~vehicles~~items. During the live sale process, a bidder is highly likely to focus on the progress of a particular bid by mentally parsing the increasing bid numbers from the rapid pace of the auctioneer's ~~patter~~chatter. Under such conditions, the "audio and video stream quality" become secondary considerations. When moving such an experience to ~~an Internet-based~~remote environment, the A/V SubsSystem ~~100~~ engineering design is allowed to reflect these same conditions, hence the fact that A/V System 100 delivers audio and video streams, but not in such a manner that they would interfere with the ability of the remote bidder client to see the bid progress (in this case,

via a database update sent to the browser from ~~a bid sewer~~the Bid System) and act accordingly (by entering a remote bid, for instance).

The encoding/decoding algorithm~~GSM 06.1 0~~ codec is "lossy." It will not reproduce CD-quality audio but, given the design and market requirements, does not need to for the A/V Subs~~S~~ystem to function properly. The quality and frequency settings of the JPEG encoder, and the transmission/retry mechanisms built into the ~~Encoding Server's streamer~~A/V Capture System 102, do not reproduce a broadcast-quality video signal but, once again, do not need to do so. In consideration of marketplace drivers and requirements for integration with larger system designs, the codec and transport design of the A/V Subs~~S~~ystem represents a unique solution.

~~10.11.3 STREAM PRIORITIZATION~~

A follow-on to the fundamental idea of codec and transport selection is the overall design of stream prioritization within the A/V Subs~~S~~ystem ~~100~~. Working with an estimated average bandwidth of 40 Kbps, the ~~streamer~~ A/V Capture System 102 software itself is written so that packets from the encoder's GSM stream will receive consistent priority and handling unless video is available for processing. On the client side, the ~~browser applet~~Bidder Device 110 is programmed to follow these same rules, except it is also configured to look for packets from a separate ~~bid server~~Bid System 120 (under the assumption that A/V Transport is installed as a turnkey live auction solution~~),~~); ~~and~~ if it sees these packets, it is to give them priority over both audio and video streams.

~~11 PLATFORM INTEGRATION~~

~~11.1 SOFTWARE & HARDWARE PLATFORM SELECTION~~

~~The A/V System is designed to support several unique market niches, and the software design and operation (as discussed above) reflect this philosophy. However, the System is also engineered to be flexible and extensible should custom implementation opportunities present themselves. In order to ensure that developers are able to respond to rapidly changing conditions both in terms of internet topology or services and in terms of market demand, the bulk of the software platform upon which A/V System is constructed~~

~~relies on highly available "Open Source" operating system environments and language toolkits.~~

~~Similarly, the selection of hardware components was focused on the IBM/Intel-compatible market on the assumption that the best overall cost efficiencies for small to medium sized environments is to be found with this type of equipment. The server software (encoder and main server) may be ported to more proprietary environments if needed (Sun hardware and the Solaris OS, for examples), but to date the more open platform has proven quite satisfactory in terms of handling customer load. The software and hardware platform flexibility, however, should be noted as contributing to the unique nature of the A/V System of the present invention.~~

REMOTE BIDDING SUPPLEMENT FOR

TRADITIONAL LIVE AUCTIONS

ABSTRACT

A remote bidding supplement for traditional-style live auctions, comprising an audio/video system for streaming instantaneously and buffer-free live audio and video data from a live auction site to one or more remote auction bidders having a bidding device for receiving the data and for transmitting instantaneously remote auction bids for each item being auctioned at the live auction site; a clerk system for controlling and accepting auction bids received at the live auction site from onsite auction bidder and from remote auction bidders for each item being auctioned at the live auction site; a marquee system for displaying instantaneously at the live auction site auction bid information, including accepted auction bids, for each item being auctioned at the live auction site; and a bid system for broadcasting instantaneously to all remote auction bidders and to the marquee system the auction bid information for each item being auctioned at the live auction site, for receiving instantaneously auction bids from each remote auction bidder for each item being auctioned at the live auction site and for transmitting instantaneously to the clerk system each remote auction bid received for each item being auctioned at the live auction, and for broadcasting instantaneously to all remote auction bidders and to the marquee system the onsite and remote auction bids that have been accepted by the clerk system.